University of Alberta

PowerPoint and the Pedagogy of Digital Media Technology

by

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DEDICATION

To my mother and father.

ABSTRACT

This hermeneutic phenomenological study explores students' and teachers' lived experiences of digital media technologies in the classroom. Using PowerPoint as a touchstone, my research investigates how software selectively extends but also constrains what a student sees, experiences and has access to, and how it enhances but also shapes a teacher's representation and presentation of his or her knowledge, skills and values. PowerPoint sponsors a prescribed framework for staging knowledge: headings and bullet points for teachers to "talk to." This scaffolding tacitly informs how some teachers visualize and subsequently present their knowing in the lived space of the classroom. The PowerPoint slideshow, regardless of the kind of knowledge it frames, exercises a powerful sway over the teacher in moments of teaching, at times appearing as impenetrable obstacle, rather than as generative support to the teacher pursuing his or her sense of pedagogical tact.

The continued promotion of digital media technologies as neutral agents—a foundational belief or "posit" of our current ontological epoch—imperils the normative project of pedagogy by concealing the instrumental constructs they materialize. Alerting teachers to the invisible but formative inscriptions of digital technologies can develop a deeper appreciation for the complexities of today's classroom environment, as well as for the challenges students face in tomorrow's ubiquitous computing culture. More patient, critical research is called for to better understand the mediating influences of new media technologies in the classroom. Meanwhile, educators are well served by living more reflectively with digital technologies, attentive not only to what they do, but what they may undo; to what they say and what they cannot say.

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CHAPTER 1:

INTRODUCTION

> With the ever increasing importance of technologies as what orients us in the practical lifeworld, our extensive dependence on them has never been more central or more deserving of sustained critical attention. Indeed, since this dependence forms the very basis of our agency in the technologically mediated lifeworld, developing some understanding of and command over it forms the prerequisite for any subsequent practical project and must accordingly be considered the central concern of contemporary technocultural criticism.
> (Hansen, 2000, p. 258)

The technologizing of the lifeworld

A quiet takeover is occurring. But few have noticed its transformative impact. With the arrival of personal computers and the popularization of the Internet, our lifeworlds are turning irrevocably technological. We have barely begun to grasp the profoundly co-constitutive relationships we share with our digital technologies, relationships that simultaneously open new worlds of possibilities while silently closing down others. This study focuses on the features and pedagogical consequences of presentational media-technologies in the classroom. But new technologies of countless varieties are also altering our everyday lifeworlds in and out of school.

A good friend of mine has worked in schools and human service organizations for several decades as a special-needs teacher. She assiduously avoided the world of computers—until a few years ago. At that time, a new database management system was installed at her institution and all employees were required to be trained in its use. The rationale was clear: (a) The database would simplify the teachers' daily recording of the manifold educational activities undertaken, the tests performed, the meetings with

parents, and the progress made by each special-needs child, and (b) The database could then generate comprehensive reports demonstrating the non-profit agency's activities for funding purposes.

The database bore a name that sounded friendly enough: "Holmes." Indeed, after a few early grumbles regarding system crashes and the inadequacy and brevity of Holmes' form fields ("There's no room to write my stories about the children! How can I tell what is really going on with Jill if it will only accept 100 characters in each field?"), my friend pronounced the new database an unexpected but resounding success. Holmes was making her working life easier, substantially reducing the endless report writing she had become accustomed to (and adept at) throughout her teaching career. After each session, appointment or home visit, she need only pull up the appropriate form on Holmes, fill out the required fields, and be done. At the time, I felt vaguely disturbed by the apparent swiftness and ease with which Holmes had been integrated so seamlessly into my friend's professional life, a life I admired for its seasoned sensitivity to the lifeworld of the child and the consistently thoughtful, wondering care for children's individual needs. "What about those little stories and reflections you used to write about each child?" I worried. She replied confidently, "I can still write those if I want to, but this is so much easier!"

About a year later, my friend was decidedly unhappy. For one thing, she was noticing how new staff coming on did not seem to understand the breadth and complexity of this kind of pedagogical work: "For them, the work seems to be about filling in the boxes on Holmes rather than supporting Nathan in his transition to a group home. If they

can check the boxes and fill out all the form fields, they feel their job is done!" For another thing, her sense of purpose as an educator and value as a professional seemed diminished; but most of all, she felt worried for the children.

Digital technologies can and do render our daily lives easier. The Holmes database eased considerably my friend's report writing burden, rendering her sometime onerous task of report writing simpler, more circumscribed and ultimately more efficiently performed. Yet over time, the database also seemed to undermine and re-inscribe some of the pedagogical involvements that had made her work meaningful. Her professional activities appeared in a new but diminished light when perceived through the screen of check boxes and form fields given by the database. Holmes, or rather the institutionalization of Holmes, was serving silently but effectively to redefine my friend's sense of professional identity, attributing value to certain facets of her everyday work life (via prescribed form fields), while allocating little or no space (via abbreviated or absent form fields) to other aspects. For example, there was no longer room to document the incidental but meaningful anecdotes of the children in her care. Such stories, logged over time and periodically reviewed, had once yielded important insights to her regarding the well-being, development, and lifeworld of each child. The stories had also formed an essential but now disappeared thread in her personal weave of professional significance.

As "extensions" of the human body, senses and mind (McLuhan, 1964), technologies are also instrumental in initiating and sustaining new practices, serving to generate novel ways of thinking, being, and doing in the world. In the same breath, technologies attenuate and obsolesce some of yesterday's practices and ways of knowing.

Jennifer Jensen and Suzanne de Castells (2004) have observed a similar phenomenon occurring via the use of the plagiarism detection software, *turnitin.com* by some post-secondary institutions. They argue that *turnitin.com* recasts scholarly values such as originality and authorship in terms of knowledge capital and ownership, and redefines academic integrity as policing and citation practices. In cases like *turnitin.com*, it is tempting to weigh a technology's potential benefits against its possible deleterious consequences to obtain a guess at its overall effect. But such "cost-benefit" analyses fall well short of capturing the lived complexity of our hermeneutic and existential entanglements with technologies. Moreover, evolving significances and changing practices are often difficult to attribute solely to the adoption of a particular tool.

Technologies are socially constructed artifacts and, as such, are subject to the manifestations of the prevailing ethos, as well as to the preconceptions, biases and designs of their inventors. As well, technologies may be employed differently by different individuals, and differently again in different contexts. However as will be demonstrated later, every technology also constrains its adoption and use along what Marshall McLuhan (1964) calls invisible "lines of force" (p. 15), thus adumbrating individual inclinations and particular social trends. But for the moment, it is vital to note that every technology, when taken up, mobilizes a unique complex of hermeneutic influences and existential shifts in our daily lives, changes that often go unnoticed, and so remain unacknowledged in the literature of educational technology.

Sometimes a loss of meaningful practice due to the adoption of a technology may only be appreciated in the wake of its breakdown. Not so long ago, our dishwasher broke

down. Being a rather large family, this necessitated some group collaboration to wash, dry and put away the dishes until the new dishwasher was installed. But in the interim, something unexpected happened. While we all initially balked at performing this tedious task after dinner, once everyone chipped in, the time would pass quickly in lively conversations, often very different from those we enjoyed at suppertime. Over the course of the week, I began to look forward to this time and even began to question whether we really wanted another dishwasher. While we eventually did purchase a new dishwasher, the incident gave us pause to consider what had been lost in this bargain of convenience. A technology may disburden us of tiresome chores, but it may also obsolesce the practical knowing and relational moments that once congregated about that chore. Along these lines, philosopher Albert Borgmann, in an interview with David Wood (2003), cautions against a class of modern technologies that move "beyond lifting genuine burdens and start freeing us from burdens that we should not want to be rid of" (Wood, ¶12). Yet even when a technology is clearly "lifting a genuine burden," more than the burden may be lifted from us.

Richard Sclove (1995) opens his *Democracy and Technology* telling of a small village in northeast Spain. During the 1970s, indoor plumbing was installed in all the houses of Ibieca. Once running water was available in their homes, Ibiecans no longer needed to visit the village fountain to fetch water; washing machines were purchased, and so the women no longer gathered at the village basin to scrub laundry. But while these laborious tasks were rendered superfluous, the social life of the village underwent a dramatic change.

> The public fountain and washbasin, once scenes of vigorous social interaction, became nearly deserted. Men began losing their sense of familiarity with the children and donkeys that had once helped them to haul water. Women stopped congregating at the washbasin to intermix their scrubbing with politically empowered gossip about men and social life. In hindsight, the installation of running water helped break down the Ibiecans' strong bonds—with one another, with their animals, and with the land—that had knit them together as a community. (Sclove, 1995, p. 2)

Modern plumbing technology relieved the Ibiecans of a substantial daily burden, opening their lives to other possibilities. Yet it is clear that the arrival of this technology carried significant social and political implications, dissolving relational ties, and dispersing the community to the fate of more individual but insulated lives. For Sclove, most worrisome is the loss of opportunities to gather publicly to discuss and debate matters of local political import, thus effectively dismantling the foundations of localized participatory democracy.

One may argue that the villagers remain empowered to restore their lost community life whenever they so choose, just as my friend above confidently announced that she could, whenever she wished, take up her old practice of writing stories of the children. However, consider first Langdon Winner's (1989) reflections on the arrival of another technology in our own society:

> None of those who worked to perfect the technology of television sets in its early years and few of those who brought television sets into their homes ever intended the device to be employed as the universal babysitter… Similarly if anyone in the 1930s had predicted people would eventually be watching seven hours of television each day, the forecast would have be laughed away as absurd. But recent surveys indicate that we Americans do spend that much time, roughly one-third of our lives, staring at the tube. Those who wish to reassert freedom of choice in the matter sometimes observe, "You can always turn off your TV." In a trivial sense this is true. At least for the time being the on/off button is still included as standard equipment on most sets … But given how central television has become to the content of everyday life, how it has become the accustomed

> topic of conversation in workplaces, schools, and other social gatherings, it is apparent that television is a phenomenon that, in the larger sense, cannot be "turned off" at all. Deeply insinuated into people's perceptions, thoughts, and behavior, it has become an indelible part of modern culture. (Winner, 1989, p. 12)

Technologies can exercise profound influences on the ways our society and individual lives are organized, signified and lived out, gathering and sustaining certain practices and ways of knowing while dispersing and diminishing others. Despite how easy it may be to "turn on" the latest technology, that is, integrate it seamlessly into our daily lives, "turning off" or resisting the effects and influences of that technology can turn out to be surprisingly difficult.

Resistance is futile

> We are the Borg. Lower your shields and surrender your ships. We will add your biological and technological distinctiveness to our own. Your culture will adapt to service us. Resistance is futile. (Berman, et al., 1996)

Evoking the cyborg collective from the motion picture *Star Trek: First Contact*, may seem rather over-the-top here, but the phrase it popularized—"Resistance is futile"—has been used on numerous occasions to describe and popularize the notion that technology integration in schools is inevitable (Rollans, 2004). Teachers who are critical of, or in some manner "resist" technology integration have been variously labeled as "late adopters," "technology reluctants," technophobic, regressive or even ignorant.

During the last three decades, corporate incentive programs and publicly funded initiatives and reward systems have proliferated at all levels of education in hopes of overcoming such resistance to technology integration. Popular press articles like "Winning teachers over: How you can battle resistance to technology—and win"

confidently frame this apparent feet-dragging as a fear of change. Others, like Jamie McKenzie (1999), more generously attribute the failure "to convert reluctance into enthusiasm" as insensitivity to "the very real concerns of reluctants" coupled with a lack of preparation and support. McKenzie offers this composite of the "good" but "technology reluctant" teacher.

> Sally Jane sits at her desk peering past rows of empty student desks toward three silent computers grouped at the back of her classroom. It is the third week of school, but these computers have yet to be turned on.
>
> Sally Jane is a technology reluctant. Although she has been teaching as long as computers have been known to schools, she has resisted their use while concentrating instead upon good teaching. Her students love her. She is demanding, sometimes inspiring, and is known within her community for improving student performance, but Sally Jane has not yet seen much value in two decades of technology promises and products. She is reluctant to fix her class if it isn't broken. (McKenzie, 1999, ¶1-2)

Given this scenario, Sally Jane's reticence to "fix her class" seems an entirely reasonable, indeed a pedagogically sound response to the three computers sitting silently at the back of her classroom. McKenzie suggests that, unlike the "early adopters," technology reluctants "are not won over by talk of multimedia or fanciful virtual bike trips across Africa" but demand compelling evidence that technology integration will improve student performance, test scores, and the quality of teaching and learning. The presumption of course is that such compelling evidence actually exists just beyond their purview.

Parents refusing to provide regular access to digital technologies are similarly cast. For example, quantum physicist David Deutsch expresses an extreme version of this sentiment when he describes parents who deny their children access to video games as

abusive:

> Violence is where you hurt people. Games just appear on a screen; they don't actually hurt anybody. The only actual hurting that goes on is by parents when they prevent or discourage children from playing [video games]. (Deutsch in Fitz-Claridge, 2003)

At a recent American Educational Research Association (AERA) conference symposium, after the presentation of a dazzling host of new multimedia tool uses for the classroom, one educational researcher in the audience stood up and complained with some frustration about a sizeable contingent of parents who were "ignorantly" resisting such innovative digital technology initiatives in schools in the Silicon Valley area: "What can I do about *them*?" The large group of educators and scholars assembled were sympathetic to her troubles yet remained remarkably incurious that, of all the people who might be termed "resistant," Silicon Valley professionals could hardly be labeled the technophobic or ignorant sort when it comes to digital technologies. Could it be that these parents might possess an unusually well informed understanding of computing technology and its possible effects? If this is true, their resistance could hardly be termed ignorant, but might well reflect a missing measure of pedagogical thoughtfulness regarding the integration of digital technologies in education.

Background to the Study

Cell phones, iPods, gaming systems and BlackBerries are changing the way we work, play and interact in the digital age. Similarly new media, online databases, smart classrooms equipped with wireless technologies and new software tools are profoundly changing processes of teaching and learning in secondary and postsecondary settings. Few are surprised that in virtually every classroom in schools and universities computers

have become commonplace. Students supplement textbooks by accessing their assignments and readings online, they word-process their course papers, download PowerPoint presentations and class notes, keep in touch through Facebook and cell phone texting. New technological tools are changing how we learn, what we know, and how we understand the world around us. Yet, few educational technologists appear to question how these new and habitual uses of software tools in educational settings may also be imposing pedagogically questionable constraints on teaching practices, and unintentionally biasing how knowledge across disciplines is being represented, presented and subsequently held by students. Generally these new and unexamined practices are simply being taken-for-granted.

Just as the architecture of buildings and classrooms predispose certain pedagogies of teaching and learning, so the architectures of modern technologies, and more specifically, the design of common and increasingly popular software systems, shape and license certain ways of knowing and doing over others. Software encodes values—decisions about what is important, useful and relevant, and what is not, restricting certain activities by making others possible or impossible (Lessig, 1999). This is not to suggest "conscious conspiracies or malicious intentions" (Winner, 1986, p. 25)—rather media and software bias can arise from a variety of unintended sources, including technical considerations or unexpected context of use (Friedman & Nissenbaum, 1996).

Research question

Thus, my main research interest investigates the following question: How are new

media technologies, (re)shaping knowledge[1], altering how it is represented, presented, and subsequently comprehended? To narrow the scope of my investigation of the invisible "lines of force" (McLuhan, 1964, p. 15) software tools seem to be exerting in the educational context, I have elected to study a widespread, relatively simple to use, software presentation tool: PowerPoint. Using PowerPoint as a touchstone, my research investigates how software selectively enhances but also constrains what a student sees, experiences and has access to.

Subject to my main research interest are the following subsidiary questions:

(a) How can phenomenology and related qualitative approaches gain a grasp of the modalities in which PowerPoint is experienced?

Analyzing PowerPoint use in classrooms, I identified three distinct modes of PowerPoint engagement, as addressed in the following questions:

(b) How do students experience PowerPoint presentation?

(c) How do teachers experience teaching through PowerPoint presentation?

(d) How do teachers experience constructing a lesson using PowerPoint?

As I proceeded through my study, other questions surfaced that bore pursuing within the context of these modes of engagement.

(e) As teachers seize hold of PowerPoint as a tool to enhance their teaching practices, what styles of teaching and learning are educators and students becoming accustomed to? How might PowerPoint affect habits of mind?

(f) What are the "affective" or aesthetic dimensions of PowerPoint?

---

[1] My use of the term knowledge is intended to be inclusive of the passions, skills, attitudes, and emotions that inhere in teachers knowing.

(g) What is the nature of the vocative appeal digital technologies like PowerPoint seem to exercise in the classroom? Can we catch glimpse of the new lifeworlds opened as teachers respond to the invitational quality of these technologies? How do we as teachers and students stand *in relation* to these digital technologies?

Despite much commentary and discussion in the literature for and against PowerPoint in the classroom, Farkas (2005) notes that relatively few empirical investigations of this software tool have been undertaken. For example, it is suggested PowerPoint supports a cognitive style that is inconsistent with both the development of higher analytical thinking skills and the acquisition of rich narrative and interpretive understanding (Oppenheimer, 2003; Parker, 2001; Tufte, 2003a, 2003b; Turkle, 2004a, 2004b). But, importantly, we do not know how students actually experience the PowerPoint mediated lessons and lectures. We are missing, in fact, what Turkle (2004a) calls "the phenomenology of the digital experience" for students and teachers alike (p. 102).

Methodological orientation

Mindful of Turkle's suggestion that we may be missing a phenomenology of the digital experience, this is precisely the approach I take for my research methodology. A central feature of phenomenological method is the gathering of a field of descriptive evidence from which underlying patterns and structures of experience can be drawn (van Manen, 1997). As mentioned above, my study addresses three distinct modes of PowerPoint engagement: (1) how PowerPoint presentation is experienced by students; (2)

how teachers experience constructing a presentation with PowerPoint; and (3) how teachers experience teaching through PowerPoint presentation.

Through in-depth interview of fourteen college students and twelve instructors, as well as classroom observation on two different campuses, I use hermeneutic phenomenological method to capture the particularities of the PowerPoint experience in the form of lived experience descriptions. Phenomenological descriptions culled from participant recollections of actual experiences and supported by observation, may be powerfully recognizable to readers. Using techniques such as comparing pedagogical styles of classroom discussions and presentations with and without PowerPoint I examine how the experiences of computer-mediated presentations are uniquely sponsoring and providing for modes of teaching and learning that are always and inevitably embodied and situated in particular temporal, spatial and relational contexts.

Hermeneutic phenomenology

The main focus and aim of phenomenological inquiry is the description of lived experience, that is, the description of phenomena as they present themselves or as they are given in experience. It is the practice of fidelity to lived experience. Phenomenology is concerned with how we experience our world *pre-reflectively, pre-verbally* in its lived immediacy. As well as describing experience, *hermeneutic* phenomenology seeks to draw out the meaning or significance of our practical involvements in the world. Such research formulates questions of the type, "What is this or that human experience like?" It is an attempt to return "to the things themselves" (Husserl, 1911/80, p. 116), and further, to let these things speak for themselves (Heidegger, 1962). Phenomenology is not interested in

conceptualizing, theorizing or idealizing experience, but rather in describing and interpreting experience as it is lived.

Phenomenological research requires a "heedful, mindful wondering about the project of life" (van Manen, 1997, p. 38). It is an attitude; it is also a writing project not unlike that of poetry. Phenomenological writing intends to evoke in the reader the experience of the phenomenon being studied, as well as invite a sense of wonder about it. To accomplish this, the researcher must approach the phenomenon under study with openness, and too, must come to know it, live it intimately. To this end, van Manen (1997) outlines a way for doing such phenomenological research. He describes several heuristic activities that are dynamically interrelated.

Orienting to the phenomenon: wondering about PowerPoint

Recently I explained to one of my colleagues (an avid PowerPoint user) that I am interested in the phenomenon of PowerPoint. He responded with disbelief. "Why would you be interested in studying PowerPoint? What is there to study about it? PowerPoint is just a piece of software that helps to organize lectures. End of story." But when I began to describe at the hand of some anecdotes what I have seen happening in classrooms and conference sessions my colleague began to perk up: Yes, it is strange that PowerPoint seems to change the way we experience knowledge. Mmm, it is weird that students tend to experience split attention in PowerPoint classes. And after some more examples, my colleague said: "I wonder what it is about PowerPoint that these things are happening."

Phenomenological research begins with identifying a question of significant interest and wonder. The question must be of personal, "abiding concern" to the

researcher, and address a phenomenon that human beings live through. Deciding such a question is to commit to a quest, or a deep form of questioning, for which no definitive answer is expected to be found. Rather, the aim is towards insight into what it is to be human, towards "re-achieving a direct and primitive contact with the world" (Merleau-Ponty, 1962/2002, p. vii).

The researcher's orientation is at once his or her intentionality, or directedness and attachment to the world, for instance, as a teacher. Too, the researcher must strive for openness towards the phenomenon itself, so as to allow "the structure of the lived experience [to be] revealed to us in such a fashion that we are now able to grasp the nature and significance of this experience in a hitherto unseen way" (van Manen, 1984, p. 43). Part of this process of opening to the phenomenon, involves *bracketing* or suspending one's preconceptions and presumptions as much as possible, for example, through making these explicit. The central activity initiated here is wonder, or awakening to the essential mystery of the phenomenon: "this fundamental amazement animates one's questioning of the meaning of the experience of the world" (p. 185).

Investigating existentially: collecting lived experience descriptions

Phenomenological research data is generated through a number of sources: recounting personal experiences (constructing anecdotal accounts from one's own life experiences of the phenomenon), interviewing others to collect lived experiential descriptions, tracing etymological sources and gathering idiomatic phrases, locating experiential material from literary and artistic works, and consulting other phenomenological writing as insight cultivators.

Beyond exploring these more classic phenomenological data sources, it is relevant to note that PowerPoint is a high-technology artefact. Of particular interest is the recognition that the internal structure or "ur-form" of software tools, including that of PowerPoint, is for the most part transparent and thus available to us. I borrow the notion of "ur-form" from Goethe. Goethe desired to discover and articulate the "ur-phenomenon" (*Urphänomen*) or archetypal pattern and process of a thing, its true theory. The ur-phenomenon is the elemental or primordial core deciding *what* a thing is and *what* it will become. Ur-phenomenon is comparable to the phenomenological notion of essence. PowerPoint's internal structure is not the essence of the PowerPoint experience. However, we can notice PowerPoint's software architecture or "ur-form" necessarily shapes the form of every PowerPoint slide-set, and consequently, although not so determinedly, the PowerPoint teaching presentation.

The PowerPoint software itself is not internally mysterious—if I know the computer language it is written in, I may quite directly "read" it (that is, if Microsoft would give permission to do so!). Even without such specialized knowledge, I might reasonably deduce the regular, internal structures and rules determining its form and behavior. Indeed, presentations created with PowerPoint are like so many different trees. They share a common morphology. The PowerPoint ur-form decides the look and feel of all such presentations.

Along these lines, Illich importantly suggested the *internal structure* of a technology (and specifically a complex, modern technology) has a formative impact on human activity. Previous to Illich, philosophers of technology, including Heidegger,

focused exclusively on the enabling of human intentions through technologies understood as "black boxes."

> For Illich, tools not only embody or express the intentions of individual human makers and users, but also and as significantly embody what may paradoxically be termed "unintended intentions"—which, for that very reason, must be investigated. There is a need for a phenomenology of the artificial related to but not limited by concerns for the effective manipulation and management of artifacts. (Mitcham, 1994, p. 183).

The more complex the tool, the more prone it is to embodying "unintended intentions." Of course, that tools have internal structures is a relatively recent event. A hammer, for example, is internally opaque. Only a hammer's *external* attributes, including shape, weight, type of material, are phenomenologically relevant. Software, on the other hand, has a relatively complex internal structure engineered to produce predetermined behavior. Thus, in understanding the lived experience of PowerPoint, some comprehension of its software architecture is in order.

Ihde (1990), in his study of technics, reveals four types of human-technology relations: embodiment, hermeneutic, alterity and background. Embodiment relations occur when a technological artefact is "incorporated" as part of our bodily experience, becoming an extension of our corporeal self. Automobiles, eyeglasses and the blind man's walking stick all fall within this relational category. We experience the world directly through and with them: technology is the medium through which we prereflectively apprehend and experience the world, transforming our perceptual and bodily senses as well as our abilities. Hermeneutic relations are occasioned when the technology itself is interpreted or "read" for meaning. We read a thermometer, a map, a book. Thus, to enter into hermeneutic relation with a technology, I must learn its unique

language. Ihde names a third focal relation we find ourselves engaged in with technology—alterity. Alterity relations occur when a technological artefact is experienced as quasi-other or anthropomorphically. We may recognize this kind of relation in the intimate bond some develop with their cars or even their iPods, giving them names, perhaps speaking to them with affection. Finally, we also enjoy background relations with technologies, wherein they function transparently and essentially unnoticed in the "disappeared," taken-for-granted background that is our lifeworld. We have such a relation with today's heating, plumbing and electrical systems, for example.

While Ihde's (1990) set of human-technology relations is neither exhaustive nor mutually exclusive, his categories serve to awaken us to some of the multiple ways we engage technologies everyday. Consider the use of PowerPoint in the classroom situation. We may discern several of these relational moments. The teacher usually takes up two significant but experientially distinct *embodiment* relations with PowerPoint: (1) in composing a presentation through the PowerPoint software application on a computer, and (2) later in presenting the composed PowerPoint presentation, using computer and data projector. In both cases, we may discern different ways of being existentially swayed by the particular PowerPoint configuration. The software script invites the teacher differently than the finished presentation in the context of the classroom.

Hermeneutically, the teacher composing a PowerPoint presentation must learn to read (and write in) the language of the PowerPoint software interface: menus, toolbars and templates, keyboard, screen and mouse. The teacher as presenter also reads (both literally and figuratively) and interprets for students each PowerPoint slide. Thus, the

teacher engages PowerPoint hermeneutically as well as existentially. Students too "read" the PowerPoint slides: their relationship with PowerPoint as student-listeners or student-audience appears primarily hermeneutic. Nonetheless, there are compelling existential implications for students. Without hesitation, students turn expectantly to each new slide. Before they have begun to grasp the meaning of the slide, the slide's radiance has already drawn and captured the students' gaze.

Alterity relations occur less frequently with PowerPoint, than, say, with a treasured old car or an intelligent robo-dog. On the other hand, if we understand alterity as a reflection of our relational intimacies and entanglements with technology, we may notice how PowerPoint and its machinery exercise a potent hold over some teachers. Even as a teacher takes possession of the PowerPoint software, and comes to rely on it in his or her teaching practice, he or she is simultaneously interned to its familiar regime, initiated into and held by its horizon of possibilities, to the particular world disclosed in, by and through this technology. Witness the young college instructor who "cannot teach without PowerPoint," or the teacher who, on the occasion of a brief technical glitch with her laptop humorously remarks, "If PowerPoint crashes, my IQ will drop 20 points." On the one hand, "as technology becomes portable, pervasive, reliable, flexible, and increasingly personalized, so our tools become more and more a part of who and what we are" (Clark, 2003, p. 10). Our corporeal involvements with technologies become less and less separable from who we are or might be as "naked" selves. On the other hand, the more intimately we embrace and become intertwined with a technology, the more vulnerable we are to its breakdowns, to it responding unexpectedly Other-wise than our

desire.

Finally, while we most often take up focal—embodiment and hermeneutic—relations with PowerPoint, on occasion background relations also seem to occur. For example, the PowerPoint slide may at times disappear into the background of a classroom discussion, only to suddenly erupt into focus again as a bouncing screensaver.

Regardless of the type of relation we engage with a technology, Ihde (1979) has shown that amplification / reduction is a basic experiential structure of all human-technology relations. By way of example, he describes a dentist's use of a sickle probe, the small metal rod with an appointed tip, intended to detect irregularities in a tooth that a finger alone could not sense:

> But at the same time that the probe *extends and amplifies*, it *reduces* another dimension of the tooth experience. With my finger I sensed the warmth of the tooth, its wetness, etc. aspects which I did not get through the probe at all. The probe, precisely in giving me a finer discrimination related to the micro-features, "forgot" or reduced the full range of other features sensed with my finger's touch. (Ihde, 1979, p. 21)

Thus, it is important to ask not *only* what a given technology enhances, but also what it simultaneously reduces or diminishes both experientially and hermeneutically. Consider another example from the classroom: the calculator. What does a calculator amplify? What does it reduce? Clearly a calculator amplifies or extends a student's ability to perform mathematical calculations. The student no longer needs to struggle to recall basic addition or subtraction facts or timetables, nor the algorithms for performing various mathematic functions. The calculator "remembers" all these facts and methods. The student needs only to accurately communicate the mathematical problem to the calculator and press "Enter." The student can get on with higher level understandings without being

caught in the drudgery of long division calculations or complex formulae.

At the same time, in over-stepping or transgressing the previous requirement to recall addition facts or multiplication tables and the performance of mathematical procedures such as long division "by hand," these numeracy skills tend to atrophy. When basic skills are seldom practiced, they tend to weaken, a phenomenon now identified as "secondary illiteracy." For example, multiplication tables are slowly forgotten like old phone numbers, and the method of long division fades from memory. Of course, educators may decide that such abilities are now essentially obsolete, and thus are willing to allow such basic skills, like numeracy, to attenuate in service of others. (A similar observation might be made with handwriting relative to keyboarding.) Thus, if numeracy is still deemed to be an important skill, teachers may decide to use calculators more judiciously or to provide practice opportunities elsewhere. Regardless, it is important to recognize that all technologies exhibit this amplification-reduction structure.

There are still other ways PowerPoint might be fruitfully explored for insight. Noting that PowerPoint slides are ultimately read and interpreted suggests PowerPoint as medium might also be "read" linguistically, aesthetically and critically. Media ecologists, like McLuhan and Postman, have outlined methods for understanding media and their effects. McLuhan and McLuhan's four laws of media (1988) and Postman's six questions (1999, pp. 42-53) are two possible frameworks that allow exploration, in a semi-structured way, what the pervasive use of PowerPoint might mean within a culture. From an Actor-Network Theory perspective, ICTs are key non-human actors or *actants* (Latour, 2005) in the (re)assembling of educational spaces. Such understanding opens up

possibilities for exploring the complex social interactions of human and non-human actors and for tracing the "power-full" effects such relationships enact in day-to-day practice. Of significance here is recognizing the PowerPoint presentation teaching-learning environment is a complex ecology of human subjects and artefacts of varying significance and place.

Reflecting phenomenologically

As phenomenological data is collected, it is read for its themes. There are a number of techniques for approaching this discovery or interpretive process. Themes are the experiential structures that define the phenomenon, signifying its unique lived through qualities. Such experiential structures are most evocatively revealed and represented in anecdotal form. A good phenomenological description or anecdote resonates with life, triggering a flash of recognition and often evoking the phenomenological nod (Buytendijk in van Manen, 1997). For example, in an open-ended interview, a student relates:

> In my class the other day, I asked a question and my prof said she'd be covering that a few slides ahead. But then several slides later I remember thinking, hey, she's forgotten my question. I felt annoyed and wanted to say something, but then I couldn't remember exactly what I was wondering about. The moment had passed.

The experience of a teacher not responding immediately to a question in deference to the PowerPoint slide set order, is not an unusual one. Of course, it may not in all cases be pedagogically appropriate to answer a student question in that exact moment. However, relating this particular anecdote to others typically evokes the phenomenological nod, "yes, I've experienced that!" Such response tends to suggest that this anecdote embodies

an important experiential structure unique to PowerPoint. As researcher, I might begin by tentatively labeling it with a theme like: "questions deferred relative to slide order." However, I may later, based on further data, discover a better, more evocative handle that more neatly describes this aspect of the phenomenon, for example: "You have a question? Yes, I'll be answering that a few slides ahead…"

Reduction, or "the ambition to make reflection emulate the unreflective life of consciousness" (Merleau-Ponty, in van Manen, 1990, p. 185), is a primary phenomenological device here. Reduction is a constellation of a number of methods. One example is the *eidetic reduction*. This method begins by comparing the phenomenon with other related but different phenomena, to help discern what the phenomenon *is not*. Knowing what a phenomenon *is not* brings us a little closer to what it *is*. For example, I could compare teachers' lived experience descriptions of giving overhead presentations with those of using PowerPoint. Both sets of experiences will share certain experiential structures, since they are both kinds of mediated lecture experiences in a classroom. However, the overhead presentation descriptions can serve to separate and pull away those meaning structures that are not unique to PowerPoint presentations.

The sensitive art of phenomenological writing

> How difficult it is…to refrain from replacing the thing with its sign, to keep the object alive before us instead of killing it with the word.
> (Goethe, 1994, p. 111)

The researcher must find language sensitive to the phenomenon, allowing the phenomenon to speak for itself, to reveal its unique being or *esse*: "to write phenomenologically is the untiring effort to author a sensitive grasp of being itself—of

that which authors us, what makes it possible for us to be and speak as parents and teachers, etc., in the first place" (p. 68). Van Manen suggests several possible ways of structuring one's phenomenological writing, for example, thematically, or existentially, that is, using the four existential themes of time, space, body and relation. Ideally, the structure of the document is decided by the phenomenon itself, a move towards attaining the Heideggerian ideal of letting the phenomenon speak for itself.

The birth of PowerPoint

Originally dubbed Presenter, PowerPoint 1.0 shipped in April, 1987, providing Apple Macintosh users with a previously unheard of category of software: desktop presentation (see Figure 1).

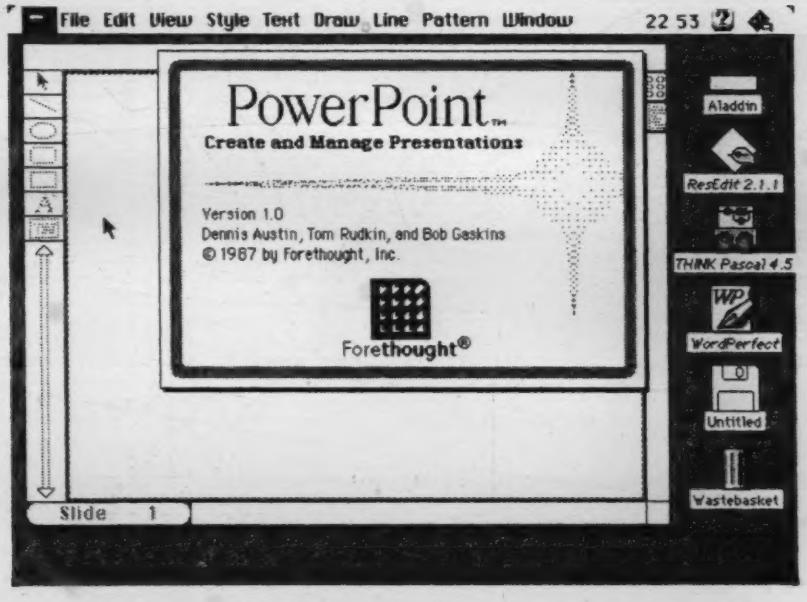

Figure 1: Screenshot of PowerPoint 1.0 by Tom Styś (2007)

Two years previous, Robert Gaskins[2], a recently hired product development strategist for a little Californian start-up called Forethought, Inc., had proposed and drafted the specs for the presentation software (Gaskins, 1984). As noted in his product proposal entitled "Presentation graphics for overhead projection," the business presentation industry in 1992 would be worth an estimated $3.5 billion annually, producing 520 million original 35mm slides and 380 million overhead transparencies. A few months later, Gaskins recruited Dennis Austin, and together they oversaw the design and development of PowerPoint 1.0, targeting the business presentation market need for easy-to-produce, low-cost high-quality overhead transparencies.

Within months of PowerPoint 1.0's release, Microsoft Corporation acquired Forethought Inc. (The New York Times, 1987, July 31). PowerPoint 2.0 for the Macintosh was released a year later, followed by a Microsoft Windows version in 1990. But it was not until February 25, 1992, at the Hotel Regina in Paris that Gaskins himself gave the inaugural "laptop video" PowerPoint presentation. He recounts:

> With a laptop casually under my arm, I entered at the back of a ballroom filled with hundreds of Microsoft people from the European, Middle Eastern, and African subsidiaries. I walked through the audience carrying the laptop, up to a podium at the front; there I opened the laptop, and plugged in a video cable on the lectern. I began delivering a presentation to introduce PowerPoint 3.0 for Windows, using PowerPoint 3.0 running on the laptop feeding video out to a projector the size of a refrigerator which put the "video slides" onto a huge screen behind me. No one had ever seen PowerPoint running on a portable computer before, let alone being used to produce a real-time video show in color with animated builds and transitions. The audience, all Microsoft people who talked to customers frequently, grasped immediately what the future would bring for their own presentations; there was deafening applause. (Gaskins, 2007, ¶ 23).

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[2] According to Parker (2001), it was perhaps Whitfield Diffie, then at Bell Northern Research, who conceived of and programmed the first PowerPoint prototype back in 1981. Although he has a somewhat different recollection of the events, Bob Gaskins concedes Diffie as his "inspiration" for PowerPoint.

Few present had witnessed the technical blood sweat and tears of the previous day and on into night that had allowed Gaskins to "casually" walk in that day, plug in his laptop and start up PowerPoint (a feat seldom perfected to this day)! No matter: the demonstration was powerful magic. Gaskins (2007) continues:

> Within a few years what had been a unique demo would become a commonplace worldwide in auditoriums and large corporate conference rooms and then would become ubiquitous in small meeting rooms in businesses of all kinds during the tech boom of the late 1990s. All this was predicted in my strategy documents from the mid-1980s; what was unexpected was that the same hardware would also extend PowerPoint use into university teaching, children's school reports and science fair projects, sermons in churches, super-titles for opera houses, and many other uses that its creators had never imagined (¶ 26).

And thus Gaskins and Austin joined the ranks of office software revolutionaries Charles Simonyi (for Microsoft Word) and Dan Bricklin and Bob Frankston (for VisiCalc spreadsheet software).

On the occasion of PowerPoint's 20th birthday, Lee Gomes (2007) of *The Wall Street Journal* writes,

> While PowerPoint has served as the metronome for countless crisp presentations, it has also allowed an endless expanse of dimwit ideas to be dressed up with graphical respectability. And not just in conference rooms, but also in the likes of sixth-grade book reports and at PowerPointSermons.com. (p. B1)

Regarding the ubiquity and notoriety garnered PowerPoint today, its creators, Robert Gaskins and Dennis Austin, are circumspect. PowerPoint, they say, is "being blamed for crimes it didn't commit" (p. B1). As Gomes (2007) notes in a recent interview with the pair, "what might be called the downside of the culture of PowerPoint is something that bemuses, concerns and occasionally appalls PowerPoint's two creators as much as it does everyone else." As is the fate of most technologies, its creators seldom have a say in how

it is taken up in the culture, nor are they in a position to predict the invention's full effects.

The paper dissertation

The form of this dissertation—"Mixed Format" (University of Alberta Faculty of Graduate Studies and Research, 2008)—is non-traditional, however it is not without precedent. A mixed format thesis is "a blending of published and as-yet unpublished research" (p. 2) with possibly one or more of the papers jointly or multi-authored. It is a variation of the so-called "paper," "paper-based" or "multi-paper" dissertation or the "PhD by published work," common in some European countries, and increasingly accepted in North America particularly in the fields of business, engineering and medicine. A typical paper dissertation consists of three to five published or "accepted for publication" manuscripts (Grant & Reed, 2006), with introductory and conclusion chapters drawing the articles together as a cohesive whole.

The paper dissertation offers a number of distinct advantages over the traditional dissertation format. Participating early in the peer-review publication process initiates the graduate student to a vital dimension of academic activity: having one's work heard, used and critically debated with in broader academic communities. The referee process assists the new scholars to orient and position themselves in relation to current discourses in the field. As well, reviewer comments tend to foster and provoke higher quality scholarship and writing, and thus potentially benefit the overall value of the work collected in the dissertation.

The paper dissertation allows multiple approaches to an overarching research

question, rather than the traditional investment in a single methodology. Researching and writing a cohesive set of papers addressing a single topic encourages multiple perspectives and a potentially innovative mix of methods. However, employing multiple approaches may cultivate only a superficial grasp of a several methodologies rather than in-depth expertise with one. In the field of education, Duke and Beck (1999) note that paper dissertations potentially allow multiple audiences to be addressed—academic, professional and community—and thus importantly encourage educational research dissemination across a broader range of stakeholders.

Doctoral research is a significant source of new knowledge, and yet dissertations, due to their length and general lack of availability outside of the home institution, tend to be not widely read (Kamler, 2008). Peer-reviewed journal publication, as the standard method and genre of research dissemination in the academic community, is arguably the more promising venue for doctoral research distribution. Meanwhile, there is a growing trend towards the e-dissertation (submission of an electronic copy), which will potentially solve availability issues in the near future. Despite this development, journal publication will likely continue to be an increasingly preferred research distribution genre due to its digestible length, the peer-review process, and the particular academic audience and context addressed by a given journal.

Journal articles, however, are stand-alone manuscripts, whereas individual chapters in the traditional dissertation rest in the context of the whole. Thus the paper dissertation format often "necessitates *abundant repetition* as…the scene [is set] anew for each article" (Conrad, 2004, p. 8, emphasis in the original). Such redundancy, while

expected, may be distracting for those reading the paper dissertation as a single document.

Overview and organization of the papers

This dissertation gathers seven papers. Two are in print, two are awaiting publication, and the others are in various stages of the journal review process. The first paper firmly anchors this collection in the phenomenological tradition, and in particular, the practical hermeneutic phenomenology of Max van Manen (1997). While my doctoral research explorations drew me along several different but fertile tracks, each adventure found me soon back to phenomenology—sometimes much to my surprise. One of those excursions involved the work of Marshall McLuhan; another was in the field of human environmental aesthetics. The remaining papers explore and report on different aspects of my phenomenological research, reflections and philosophical explorations of PowerPoint.

"PAPER I – Phenomenology," forthcoming in *The SAGE Encyclopedia of Qualitative Research Methods,* is co-authored with Max van Manen. How might phenomenology serve as the primary ground for this study? The piece is an encyclopedic reference for qualitative researchers regarding phenomenology, presenting an overview of its philosophical and historic roots, as well as a brief introduction to its methods and practical applications in the human sciences.

"PAPER II –PowerPoint's Pedagogy," has been submitted for publication consideration. What is it like for students to experience PowerPoint lectures? This chapter is a phenomenological study of the lived experience of post-secondary students in PowerPoint-supported classrooms. The research is based on interviews with fourteen

male and female subjects, aged 22–45. These participants were asked to recall personal experiences of PowerPoint as college or university students.

"PAPER III – PowerPoint, Habits of Mind, and Classroom Culture," is published in the *Journal of Curriculum Studies* (2006). How might PowerPoint invite or seduce educators to reshape knowledge in particular ways? And how is this PowerPointed knowledge subsequently presented to students in the classroom? What might it mean to say that PowerPoint encourages a particular "habit of mind"? This paper shows that the particular forms of knowing, relating, and presenting with PowerPoint are decided in part by teacher habituation to the software tool's default patterns, but also by the very nature of the presentation medium itself.

"PAPER IV – On the 'informed' use of PowerPoint: rejoining Vallance and Towndrow," is published in the *Journal of Curriculum Studies* (2007). The article is a rejoinder to Vallance and Towndrow's (2007) " Towards the 'informed use' of information and communication technology in education: a response to Adams'". While Vallance and Towndrow propose "informed-use" of ICTs as antidote to the unnoticed sway PowerPoint exercises over its users, I press my point further by suggesting that, as a teacher takes up and uses tools like PowerPoint, their teaching practices, relations with students, and ways of interpreting the world are always already *informed*—conformed, reformed and deformed—by the given technology-in-use. Such prereflective prehension cannot be "solved" simply by some teachers explicitly using PowerPoint in ways other than it was intended. I call instead for more patient, critical research aimed at better understanding the mediating influences of new media and information and

communication technologies in the classroom, and for educators to live more reflectively with digital technologies.

"PAPER V – Teachers Building Dwelling and Thinking with PowerPoint," is based on a paper presented in Vancouver at the *Canadian Society for the Study of Education* (CSSE) 2008 conference, and is currently being prepared for peer-review publication consideration. What is the lived experience of PowerPoint for teachers? How do teachers experience using PowerPoint to prepare a lesson? How do teachers experience teaching with PowerPoint? This manuscript is a phenomenological study of the lived experience of teachers using PowerPoint in their classrooms. The study addresses two primary modes of teachers "being-with" PowerPoint, specifically: (1) the experience of using PowerPoint to prepare a lesson; and (2) the experience of teaching via PowerPoint presentation. Through observation of college classrooms as well as in-depth interview of twelve university and college instructors, I use phenomenological method to capture the particularities of the PowerPoint experience for teachers.

"PAPER VI – The Poetics of PowerPoint," is forthcoming in *Explorations in Media Ecology*. An earlier version of the paper received an "Outstanding Paper Award" at *ED-MEDIA 2007 World Conference on Educational Multimedia, Hypermedia & Telecommunications*. PowerPoint makes an effective appeal to teachers and students, but what is its *affective* appeal? The chapter examines PowerPoint through the phenomenological lens of human environmental aesthetics, recognizing this presentation software as an evocative object that makes effective as well as affective claims upon teachers and students alike. Aesthetically, teachers using PowerPoint slides may be

unwittingly educating a questionable cognitive style, shifting their students' gaze away from nuanced human gesture and facial expression toward a hypnotic corporate gloss, and thereby altering classroom atmosphere and tone, even as teachers efficiently deliver the "content" of their talk. In an aesthetically thick sense, PowerPoint instantiates, indeed, significantly fortifies, the transmission or "banking" model of teaching-learning, a model already perpetuated through traditional school architectures, standard classroom geometries and choice of educational artifacts. Nonetheless, I conclude, coming to a finer appreciation of PowerPoint's aesthetic potentials may yield "saving" possibilities.

"PAPER VII – Educational Technologies and the Invitational Character of Things" was also prepared for the *Canadian Society for the Study of Education* (CSSE) 2008 conference. What is the vocative appeal of digital technologies like PowerPoint? *Things*—the material conditions of our lifeworld—are often overlooked as incidental or inconsequential entities rather than problematized and enlisted as important participants in qualitative research projects. How might one include a thing or things as key qualitative research "participants" when investigating contemporary learning environments. How might we bring to inquiry artifacts, in particular, the information and communication technologies (ICTs) supporting and reforming today's teaching and learning practices? In this manuscript I explore the invitational character of things, in particular the things populating today's technology-enhanced classrooms. From a phenomenological perspective, the things of our lifeworld are perceived or "heard" as invitations, requests, demands, and even seductions. To become attuned to this silent appeal, the phenomenologist must attend not only to what a given technology does, but

also listen to what it "says" to us: how it appeals or makes a claim on us. The concealed, "anonymous labor" (Harman, 2002) performed by, with, and through a technology-in-use—or what Heidegger calls the "readiness-to-hand" or handiness of a tool—is sensitively attended to alongside its more visible, "present-at-hand" qualities. In this way, phenomenology affords us glimpses of the prereflective, fluent rapport our corporeal selves enter and engage with technologies everyday.

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CHAPTER 2:

PAPER I – PHENOMENOLOGY[3]

Phenomenology is the reflective study of prereflective or lived experience. Or to say it somewhat differently: a main characteristic of the phenomenological tradition is that it is the study of the lifeworld as we immediately experience it, pre-reflectively, rather than as we conceptualize, theorize, categorize, or reflect on it. Phenomenology is now commonly considered as one of the alternative qualitative research methodologies to which researchers can turn. But phenomenology is also a term that can carry quite different meanings depending on theoretical and practical contexts.

Forms of Phenomenology

Originally, phenomenology is the name for the major philosophical movement in continental Europe in the 20th century. More recently phenomenology has been developed as a human science that is employed in professional disciplines such as education, health science, psychology, and law. Phenomenological research is the study of lived or experiential meaning and attempts to describe and interpret these meanings in the ways that they emerge and are shaped by consciousness, language, our cognitive and noncognitive sensibilities, and by our preunderstandings and presuppositions. Phenomenology may explore the unique meanings of any human experience or phenomenon. For example, it may study what it is like to have a conversation, how students experience difficulty in learning something, how pain is experienced in

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[3] This chapter was co-authored with Max van Manen. A version of this chapter has been accepted for publication in *The SAGE Encyclopedia of Qualitative Research Methods*.

childbirth, what it is like to experience obsessive compulsions, how young people begin to experience secrecy and inwardness, and so forth.

Phenomenological Understanding

It has been said that a proper understanding of phenomenology can only be accomplished through doing it. Phenomenological understanding needs to be practiced as method, and identified as a style of thinking—a manner of orienting to experience as we live through it.

Within the discipline of philosophy, phenomenology is practiced through the methods of the reduction. And as a human science, phenomenology has imported an additional variety of empirical data gathering techniques and reflective methods. It explores ways of doing research that remain focused on and sensitive to the concrete, subjective, and prereflective dimensions of the lifeworld.

Different phenomenologists such as Edmund Husserl, Martin Heidegger, Maurice Merleau-Ponty, and Jacques Derrida agree that phenomenological understanding is achieved through language. A good phenomenological text can make us suddenly "see" something in a manner that enriches our understanding of everyday life experience and may transform our practices. But phenomenological reflection also runs up against the limits of language. The production of insight must proceed through the creation of a research "text" that speaks to our cognitive and noncognitive sensibilities. Thus, phenomenological understanding is distinctly existential, emotive, enactive, embodied, situational, and nontheoretic. A powerful phenomenological text thrives on a certain irrevocable tension between what is unique and what is shared, between particular and

transcendent meaning, between what can be thought and what remains unthought, and between the reflective and the prereflective spheres of the lifeworld.

Lived Experience

The term "lived experience" derives from the German *Erlebnis*—experience as we live through it and recognize it as a particular type of experience. It could be argued that human experience is the main epistemological basis for many other qualitative research traditions, but the concept of lived experience possesses special methodological significance for phenomenology. The notion of lived experience, as used in the works of Edmund Husserl, Maurice Merleau-Ponty and like-minded phenomenologists, announces the intent to explore *directly* the originary or prereflective dimensions of human existence.

Our language can be seen as an immense linguistic map that names the possibilities of human lived experiences. The value of phenomenology is that it prioritizes and investigates how the human being experiences the world: how the patient experiences illness, how the teacher experiences the pedagogical encounter, how the student experiences a moment of failure, how a person experiences grief, and so forth. Every lived experience (phenomenon) can become a topic for phenomenological inquiry. The phenomenological attitude keeps us reflectively attentive to the ways human beings live through experiences in the immediacy of the present that is only recoverable as an elusive past.

Phenomenology is interested in recovering the living moment of the "now"—even before we put language to it or describe it in words. Or to say this differently,

phenomenology tries to show how our words, concepts, and theories always shape (distort) and give structure to our experiences as we live them. But, the living moment of the present is always already absent in our effort to return to it. For example, it is one thing to get lost in a novel but it is another to retrospectively capture what happened to us, just now, as we slipped into this textual space and began to dwell in the story. Similarly, we may identify and rate with empirical descriptors the nature and intensity of various forms of pain, but the actual moment of being struck by pain or suffering pain somehow seems to be beyond words as we try to retrospectively appropriate the experience. These experiences can be described but ultimately the meaning of the primal experience is beyond propositional discourse.

The Emergence of Traditions and Their Contexts

Within the large sweep of phenomenological philosophy a variety of phenomenological schools and traditions may be distinguished, such as transcendental, existential, hermeneutic, linguistic, and ethical phenomenology. Often these traditions are strongly associated with renowned phenomenological scholars.

Transcendental phenomenology may be identified with the path-breaking work of Edmund Husserl and his interpreters. Some basic terms of transcendental phenomenology are "intentionality," "eidetic reduction," and "constitution of meaning." For Husserl, phenomenology is the rigorous, human science of all conceivable transcendental phenomena. It describes the way that knowledge comes into being in consciousness, and clarifies the assumptions upon which all human understandings are grounded.

Existential phenomenology is often associated with Martin Heidegger, Jean Paul

Sartre, and Simone de Beauvoir. Some basic terms of existential phenomenology are "modes of being," "ontology," and "lifeworld." In his last work, *The Crisis of the European Sciences*, Husserl had already turned phenomenological analysis from the transcendental ego and consciousness, to the prereflective lifeworld of everyday experience. Especially Martin Heidegger and Maurice Merleau-Ponty radicalized this turn toward the existential world as we live and experience it. With Heidegger this turn became an ontological rather than an epistemological project. Instead of asking how the being of things are constituted as intentional objects in consciousness, Heidegger asked how the being of beings (things) shows itself as a revealing of Being itself.

Hermeneutic phenomenology is linked especially with Hans-Georg Gadamer, and Paul Ricoeur. Some basic terms of hermeneutic phenomenology are "interpretation," "textual meaning," "dialogue," "preunderstanding," and "tradition." Gadamer and Ricoeur are among the foremost representatives of the movement of hermeneutic phenomenology. Phenomenology becomes hermeneutical when its method is taken to be interpretive (rather than purely descriptive as in transcendental phenomenology). But the contrast between descriptive and interpretive phenomenology is sometimes over-simplified by researchers in the professional disciplines. Heidegger argued that all description is always already interpretation. Every form of human understanding is interpretive.

Linguistic phenomenology includes the French poststructuralist work of Maurice Blanchot, Jacques Derrida and Michel Foucault, even though the latter denied that he was a phenomenologist. Basic terms of linguistic phenomenology are "textual autonomy," "signification," "intertextuality," "deconstruction," "the outside," "discourse," and "space

of the text." The work of Foucault on the nature of language and discourse contributes to certain explorations of the relation between understanding, culture, historicality, identity, and human life. But it is especially in the work of Derrida and colleagues such as Hélène Cixous, where we can speak of a radical linguistic phenomenology.

Ethical phenomenology is exemplified in the work of Max Scheler, but later with the thinking of Emmanuel Levinas and his translator Alphonso Lingis. Basic terms of ethical phenomenology are "otherness," "responsibility," "I-Thou," "the face," and "(non)relationality." Ethical phenomenology perhaps originates with Max Scheler, a contemporary of Husserl, in his study *The Nature of Sympathy*. It also finds its origin in Sartre's concern with ethical themes of freedom, responsibility, and choice. Ethical phenomenology is especially associated with the original and influential work of Levinas. For Levinas, the Husserlian focus on the essence of things and Heidegger's preoccupation with the modalities of being in the world all are manifestations of the primacy of being, self, or "mineness" in traditional philosophical phenomenology. For a truly profound understanding of human reality one must not ask for the meaning of being or presence but for the meaning of what is otherwise than being: alterity, or the infinite. Levinas finds the phenomenological power of this question in the encounter with the face of the other.

Phenomenology of Practice

Since the mid-nineties, phenomenology has been widely imported into the practical, applied, or professional disciplines such as the health sciences, education, clinical psychology, and pedagogical disciplines. Within these professional fields

phenomenology has a somewhat different history than most other qualitative research approaches. For example, action research developed from within the field of sociology and had a distinct and critical-political social agenda; ethnography emerged as a distinct anthropological field research method. In North America, phenomenology seeped into the professional fields in part via ethnomethodology, ethnography, interpretive sociology and other such social science streams, and in part through pockets of interest such as humanistic psychology, the work of existential psychology, and educational studies and pedagogy.

Before there was any significant interest in phenomenology in North America, a unique experiment had taken place in the Netherlands, Belgium, Germany, Switzerland, and France. For example, the University of Utrecht School can be considered a genuinely original contribution to the international discussion about phenomenology in the professions. It consisted of an assortment of phenomenologically oriented psychologists, educators, pedagogues, pediatricians, sociologists, criminologists, jurists, psychiatrists, and other medical doctors, who formed a more or less close association of like-minded academic and professional practitioners. Scholars such as the psychiatrist J.H van den Berg wrote amongst other things about the changing nature of childhood; the pedagogue-philosopher O.F.F. Bollnow wrote on the pedagogical atmosphere; M.J. Langeveld established the field of phenomenological pedagogy; the medical doctor F.J.J. Buytendijk produced numerous studies on topics such as pain and obsessive compulsiveness.

In North America, practically oriented phenomenological studies are, for example, found in psychology through the efforts of Amadeo Georgi and Clark E.

Moustakas; in education through in the writings of Maxine Greene and Max van Manen; and in the health sciences in the works of Patricia Benner and Kay Toombs, etc.

The Reduction

It is impossible to understand phenomenological method without understanding the meaning and significance of the reduction. "Reduction" is the technical term that describes the phenomenological device of bracketing (épochè) that permits us to discover the experiential surge of the lifeworld. The aim of the reduction is to reachieve a direct and primal contact with the world as we experience it rather than as we conceptualize it. But the discovery of the prereflective lifeworld through the technique of the reduction always transcends the lifeworld—when we bracket lived experience we experience meaning. The reduction is meant to bring the aspects of meaning that belong to the phenomena of our lifeworld into nearness. In particular it aims to bring into focus the uniqueness of the particular phenomenon to which we are oriented.

The method of human science is never simply a matter of procedure, whether simple procedures or advanced procedures. Rather the reduction refers to a certain thoughtfulness. To come to an understanding of the unique meaning and significance of something we need to reflect on it by practising a careful attentiveness. The term "reduction" is somewhat misleading since reduction—the ambition to make reflection emulate the unreflective life of consciousness—is ironically a protest against reductionism. So how then is reflection supposed to emulate lived experience? Of course, the emulator is language, and the process of emulating is performed through writing, and the intent of writing is to produce textual portrayals that resonate the kinds of meanings

that we seem to recognize in prereflective experience.

There exist many philosophical investigations and explications of the reduction that can make this topic complex and confusing. And that is not surprising in view of the fact that the project of phenomenology can be understood in a variety of ways. Here several levels of reduction may be distinguished for their methodological usefulness: wonder or heuristic reduction, openness or hermeneutic reduction, concreteness or phenomenological reduction, universality in contingency or eidetic reduction, and flexible rationality or methodological reduction. Each of these dimensions of the reduction need to be practised as if in concert.

Human Science Methods

The reduction is the method central to the phenomenological study of the lifeworld. As phenomenology was adopted by other disciplines, empirical and reflective methods were imported that are derived from the humanities and the social sciences. Empirical methods such as interviewing, observation, eliciting written descriptions, and borrowing from literary and artistic sources are now used to gather experiential material. This "data" is best collected in the form of descriptions of lived-through moments, experiential anecdotal accounts, remembered stories of particular experiences. Thus, phenomenological experiential accounts should not be confused with opinions, interpretations, views, explanations of certain phenomena.

Phenomenological inquiry cannot be formalized into a series of technical procedures. However, a variety of data gathering activities may be identified that can help in doing phenomenological inquiry. These activities fall into two types: empirical

and reflective methods.

Empirical Methods

Our personal life experiences are immediately accessible to us in a way that no one else's are. However, the phenomenologist does not want to trouble the reader with purely private, autobiographical facticities of one's life. In drawing up personal descriptions of lived experiences, the phenomenologist knows that the patterns of meaning of one's own experiences are also the possible experiences of others, and therefore may be recognizable by others. To conduct a personal description of a lived experience, the researcher aims to describe a phenomenon as much as possible in experiential terms.

The focus is on the direct description of a particular situation or event, as it is lived through, without offering causal explanations or interpretive generalizations

In the various strands and disciplines in the social and human sciences the interview serves differing purposes. For example, ethnographic interviews study cultural practices and meanings. Survey or opinion interviews study the ways people perceive or feel about certain issues, their beliefs, views, and so forth. In the context of phenomenological research there are broadly speaking two types of interview: The phenomenological interview is used as a means for exploring and gathering experiential material. The hermeneutic interview is used to explore interpretive meaning aspects of lived experience material.

Sometimes, the best way to enter a person's lifeworld is to participate in it. For example, to gain access to the experience of young children, it may be important to play

with them and follow them into their play spaces. Participatory and close observation generates different forms of experiential material than is obtained through the written or the interview approaches. Observational method may require that one be a participant and an observer at the same time, maintaining a certain orientation of reflectivity while guarding against the more manipulative and artificial attitude that a reflective attitude tends to insert in a social situation and relation.

Fictional literature, such as novels and short stories, are sometimes excellent sources for experiential material. The phenomenological value of a novel, for example, is determined by what may be called the perceptiveness and the intuitive sensitivity of the author. Phenomena such as love, grief, illness, faith, success, fear, death, hope, struggle, or loss are the stuff of which novels are made. Through an experientially powerful novel, then, one is given the chance of living through an experience that provides the opportunity of gaining insight into certain aspects of the human condition.

Reflective Methods

Whereas empirical methods aim to explore the range and varieties of prereflective experiential material that is appropriate for the phenomenon under study, reflective methods aim to interpret the aspects of meaning or meaningfulness that are associated with this phenomenon and that assist with the reduction.

Phenomenological reflection aims to perceive the meanings of human experiences; and in a sense it is something everyone does constantly in everyday life. For example, when we meet a friend we do not just perceive a man or a woman. We see a person who differs from other men and women precisely in that respect that makes us

relate and talk to this person as a friend.

But what is much more difficult is to come to a reflective determination and explication of what a "friend" is. This determination and explication of meaning then is the more difficult task of phenomenological reflection. A perhaps more notorious illustration of this difficulty concerns the experience of time. What could be more easily grasped than time? We regulate our lives by time. We carry the time around on our wrist. We divide the day into morning, afternoon, evening and nighttime. We reflect on past time and anticipate the time to come. We even talk about the time going by, sometimes quickly and at other times more slowly. And yet when someone asks us "what is time anyway?" we are quickly at our wit's end to describe it. What is it that goes by fast or slowly when we say that the time is elapsing? So there is a difference between our pre-reflective lived understanding of the meaning of time and a self-reflective grasp of the phenomenological structure of the lived meaning of time. To get at the latter is a reflective and often laborious task, involving a process of reflectively appropriating, of clarifying, and of making explicit thematic aspects of meaning of the lived experience.

Our lived experiences and the structures of meanings (themes) in terms of which these lived experiences can be described and interpreted constitute the immense complexity of the lifeworld. Existential themes that may prove especially helpful as guides for reflection in the research process are lived space (spatiality), lived body (corporeality), lived time (temporality), and lived human relation (relationality or communality). We can always ask about any experience the fundamental questions that correspond to such lifeworld existentials. Therefore, spatiality, corporeality, temporality,

and relationality are productive categories for the process of phenomenological questioning, reflecting and writing. Ordinary language is in some sense a huge reservoir in which the incredible variety of richness of human experience is deposited. The problem often is that these deposits have silted, crusted, or fossilized in such a way that the original contact with our primordial experiences is broken.

In recent years, further developments in phenomenological methodology, as originally inspired by continental scholars, are found in all the major professional disciplines. These phenomenological methods share a concern with the concrete particulars of everyday life, but they are now more sensitive to subjective and intersubjective roots of meaning, to the complexity of relations between language and experience, to the cultural and gendered contexts of interpretive meaning, and to the textual dimensions of phenomenological writing and reflection. The growing interest in the relevance of such phenomenological research methodologies for the knowledge base of professional practices attests to the vitality of concerns with reflective interpretation, experience sensitive understanding, and humanistic impulses as they are applied in disciplinary domains of pedagogy, education, nursing, health sciences, psychology, social work, and other helping professions.

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CHAPTER 3:

PAPER II – POWERPOINT'S PEDAGOGY[4]

The PowerPoint of view

I am walking along a main corridor in the college where I teach. To my left, through the half-drawn vertical blinds, I glimpse a colleague teaching. I pause, unseen, and watch for a moment. The door is closed, so I cannot hear what she is saying. But I see she is addressing her class directly, her face animated, her hands and arms engaged dramatically in illustrating her speech. A large, bright PowerPoint slide frames her upper body. The slide, entitled "Kohlberg's Stages of Moral Development," has a deep blue background with several bulleted points listed in white sans serif font. Shortly she turns back to the slide, gestures towards one of the points, then another, and returns to face the class. The particular angle of the blinds blocks her students from my view. I wonder: what is this class experience like for them? How different it seems from the old chalk-and-blackboard lessons! Or is it?[5]

In important ways, PowerPoint presentations vary significantly from one teacher to another, from one discipline to another, and much more so than, say chalkboard-supported classes. How then shall the PowerPoint teaching-learning experience be delimited and described? If a teacher uses PowerPoint to display a few photographs, shall we call that a PowerPoint presentation? Yes, of course. But can we group that teaching instance in the same experiential category as the lecture delivered at the hand of a two hundred slide PowerPoint presentation of bulleted text and clipart? What of the class that integrates PowerPoint with all the available tools of a Smart Classroom or interactive whiteboard? And what do we make of an identical PowerPoint slide-set in the hands of the monotoned "slide-reading" teacher-lecturer versus the lively teacher-dramatist?

Nonetheless, it seems all such PowerPoint mediated teaching-learning

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[4] A version of this chapter has been submitted for publication.

[5] Throughout this manuscript, the italicised text designates my own reflections as I walk through the college campus where I was teaching.

experiences share certain common characteristics. For instance, one or more slides are presented during the course of the class period. The slides are colored light projected on a large flat rectangular screen (or whiteboard or wall space), magnified large enough for all to see. A white projection surface is used, typically located at the front and centre of the room. Each slide appears as a rectangular image with a 4:3 aspect ratio. This may be compared with the bright snipped-cornered, square-framed overhead foil image, or the variable rectangular landscapes of shiny whiteboards or chalky blackboards. While the slide default proportions may be adjusted within the software or through the projection unit, they rarely are. This four-by-three frame is deeply familiar, being the exact rectangular display of the standard computer screen, classic films, and of course, the 20th century family television set.

What the student sees may depend in part on his or her past experience with PowerPoint lessons:

> After some tinkering with cables and connectors, he's ready at last. I turn my attention to the teacher then move my eyes to the PowerPoint title slide now projected on the big screen. I recognize the color scheme and format: one of those tired Microsoft templates everyone seems to use these days.[6]

Indeed, PowerPoint presentations may be said to have a characteristic look-and-feel. This easily identified aesthetic is generated in part through the ubiquitous use of the design patterns and choices PowerPoint provides. For example, the instructor's handwriting is almost never seen on PowerPoint slides since handwritten characters are not an available font choice (an exception is when the instructor is using a digital pen on an interactive

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[6] This and other undergraduate student anecdotes appearing in this paper come from a phenomenological research project investigating the lived experience of software presentation tools in college classrooms.

whiteboard). Instead, Arial is a familiar font since it is the default. There are a standard set of design templates and graphics (Clipart) that come with PowerPoint. This does not mean these are the only designs or images used, but rather, they are used often because they are ready-to-hand. Color choices—slide background and text—are determined typically by templates, default selections, or the standard color palette provided. Indeed, PowerPoint is itself a template for presenting information in a certain way.

The slides themselves are presented one at a time. The control to advance to the next slide—or to the next animated point or graphic on a slide—resides under the one-touch authority of an individual, almost invariably the teacher or presentor. The one-touch control tethers this teacher to the mouse or keyboard location, unless he or she has a remote device. The transition from one slide to the next is electronically generated and seamless. The manner of any slide transition is based on preset options chosen at an earlier date by the slide-set's author or is based on the default settings given by presentation software. Only one slide is displayed at a time; previous and future slides are typically not visible to either the students (unless they have the file printout at hand) or the teacher (unless he or she is using a printout or PowerPoint's Presenter Tools). For students, too, the "feel" of a lesson mediated by PowerPoint tends to be more regimented than lessons that are less dependent on a previously committed sequence of content. It also means that when things go wrong they may go terribly wrong:

> We were about half way into class, moving through the slides at a fair clip, when suddenly, out of the blue, the black "end of slide presentation" screen appeared. the teacher said, "Darn, I must have the wrong version," meaning of course he had no more slides. Someone offered helpfully that maybe he had pressed the wrong button. He said, no, walked over and turned on all the lights, and started talking, trying to pick up from where he had left off. He wrote a single word up

> on the whiteboard— "Building"—which seemed out of context, or at least not noteworthy enough for me to write it down on my (usual) blank sheet of paper. At first he had some steam behind his words, but then that quickly fizzled out. He seemed at a loss. Then, much to my astonishment, he announced we would end there, some twenty minutes early. "Not much point in tracking down the correct version with only twenty minutes left," he mumbled. We all straggled out slowly.

The PowerPoint slide-deck, regardless of length, has been previously composed and electronically stored in a file. The ordering of the slides is predetermined; the content and form of the slides have also been decided at an earlier date and saved. In this sense, the PowerPoint slide-set is presented to the student as a finished product.

Most everyone associates PowerPoint slides with the use of bulleted text, even though some presentations never use them. As a rule however, bullets are a regular feature of PowerPoint presentations. The ubiquity of bullets is due in no small part to the default slide that explicitly invites the author of the presentation to title and bullet text. To not incur bulleted text, the author must "erase" the bullets and adjust the placement of text, or deselect the bullets using the bullet tool, or insert a text box in its place. On the other hand, given the need for the slide text to be readable to all in the room, some abbreviation of the presentation material seems quite natural. Thus in preparing a presentation, the author finds herself confronted with these questions: What information should be presented on each slide? How might each portion of important information be best represented? The template suggests bulleted text.

PowerPoint's rigidly framed form—the large 4:3 rectangle of projected light on a flat white surface, the pre-determined, linearly sequenced content, and its corporate-flavoured default aesthetics—serves to inform, shape and mediate the lived space students inhabit while viewing PowerPoint slides.

PowerPoint mediated lessons: the presentative and the representative

I continue along the hallway. In the next classroom, the lights are dimmed, blinds drawn, door closed. Perhaps the class cancelled today? But then there is a sudden flash of light from within. I stop, straining to see through the narrow slits between the vertical blinds. PowerPoint again, but I can't see the presenter at all, or the students for that matter. Of course, I know they are all in there! Against the darkness, the slide shines bright with its white background. I easily make out the black perpendicular x-y axes displayed. As I stand there, different colored lines appear on the graph, one by one, at irregular intervals. Suddenly the presenter steps into my view. I can hardly make out his face in the dark. I don't know him and decide it best to move along.

In the educational context, a PowerPoint presentation is always more than just the showing of a slide deck. The teacher is also present. Van Manen (2005) describes the pedagogical relationship as experienced along two modal dimensions: the presentative and the representative. In the presentative the learning occurs in an immediate (nonmediated) mode:

> The teacher pages through a book while eyeing the latecomers who are wandering into the class. He exchanges some comments with students in the front and then straightens out, positioning himself directly opposite the class. There is still some commotion in the room when suddenly, the teacher rises up and bellows with a baffling sneer:
> "You're nothing but a nothing, a rum thing, a dumb thing. You're nothing but a nothing—you're not a thing at all!"
> Within seconds the class is completely quiet and everyone stares in disbelief at the teacher. What? What is he saying? But the teacher does not let up, and, after a pause, he repeats the same lines. But this time his voice has lowered to a near whisper as he slowly pronounces each word as if to make sure that it will sink into our heads. We all strain to hear:
> "You're nothing but a nothing,
> a rum thing, a dumb thing.
> You're nothing but a nothing—
> you're not a thing at all!"
> Some students look puzzled. Others smile or snigger. By now it seems clear: the teacher is reciting the lines of a poem. And, indeed the teacher repeats it for a third time, but only the first and last part:
> "You're nothing but a nothing—
> you're not a thing at all!"
> He stops. Silence. He regards our faces. Frowning. Then a sense of wonder slowly

> spreads across his face. Almost automatically we imitate his wondering grimace. The silence deepens and he queries enigmatically: "So how does it feel to be called less than a thing? Should you feel insulted? What is a thing anyway?"

Here is a teacher who "is" what he teaches. He is not just teaching about poetry or about the nature of things. He presences the poem and the questioning in his very being. In the presentative mode, the pedagogical relationship is experienced directly and implicitly, that is, the students learn through the living example of the teacher. The teacher's presence, his being and doing in the world, is inevitably a powerful dimension of the pedagogical relationship. The teacher shows implicitly her own image or way of being in the world, and the student learns by simply dwelling with the teacher. First language learning at home, for instance, is highly presentative. The child learns to speak, gesture, and converse from and through the parents in an ongoing everyday manner.

The other mode of the pedagogical relation is representative:

> The first slide shows a lexicon of terms. The teacher is standing beside the screen; he points to the different categories and explains briefly what each stands for: material objects, theoretical objects, transcendental objects. In what sense are these "things"? He moves with a hop back to his laptop to touch his keypad and returns to the screen. The new slide lists several examples of theoretical objects: quark, IQ, mind.
> Next slide. He describes what transcendental means and examines each bulleted word. The teacher points to them with his hand as he names them and explains how they are embedded in categorical contexts. He moves quickly back to his laptop again. The next slide shows images of objects. Can theoretical, transcendental, and virtual objects be represented by means of images or pictures? So in what sense are these things?

Here, the teacher selectively introduces students to representative examples or images of different ways of knowing and making sense of the world. Together these examples compose the explicit curriculum. This type of information, the subject matter, is detached somewhat from everyday living; bodies of knowledge are not the world, but "stand for"

the world. They are considered reflections on or about particular subjects enabled through historically developed frameworks. Algebra, for instance, is highly representative. In formal schooling, the educator deliberately selects representative examples (subject matter, knowledge) and presentational modes (telling, showing, embodying, etc.). In teaching, both modal dimensions are active in varying degrees.

At first blush, we might think to draw a fair line between the teacher and his or her slide-deck based on these two modalities: the teacher dwells in the presentative, the PowerPoint slides in the representative. We must however look a little closer:

> He reminds us briefly what we were talking about last time as he turns on the projector. I look to the screen as the first slide comes up.

From the moment the very first slide appears, PowerPoint commands an enviable authority, appeal and presence in the classroom. Without hesitation, students turn expectantly to the new slide, but more importantly, its radiance has already drawn and captured the students' gaze. Thus Merleau-Ponty says, "perception is unconscious": in the instant of the moment, we see things before we think them. The PowerPoint image has seen us before we have really "seen" or understood it, so to speak.

The slide draws the student's interest initially by virtue of its sudden large, lit presence. Outside of the classroom, advertisers count on our eyes being drawn similarly to their billboards. Neon signage, especially when the lighting involves moving text or bright flashing images, draws our attention even more irresistibly and sometimes annoyingly. When our attention is thus caught, we find ourselves engaged immediately in making sense of what presences in front of us. We apprehend the images; we grasp textual meaning—even just a word—regardless of the personal relevance it may hold for

us.

PowerPoint slide presentations may not necessarily command the same visual fascination as blinking neon billboards. However the largeness of the projected image, its location at the front of the class room, as well as the sudden flash of slide changes, occasional animations and forgotten screensavers, render PowerPoint a visual presence to be reckoned with. Indeed, it is not the value of the slide content that first draws the student to the slide, although quality content surely helps sustain interest. But even when the content is poor or irrelevant, each transition easily draws the student back to the slide anew. A deliberate effort is then needed to break this spontaneous pull towards the big, bright slide along with its text and images, and to ignore extraneous information.

The PowerPoint slide irresistibly appeals to be looked at, grasped, read, and re-read within the context of the teacher's talk, and too, the talk is interpreted alongside and within the context of the slide. PowerPoint invites teacher and student alike to participate in the space of digital media. PowerPoint's presence in the classroom is thus highly evocative (Turkle, 2004). PowerPoint invites students to look at it, and to look at it again with every slide change. At home, the television invites us to watch it, the radio or CD player to listen to it. This invitation is particularly compelling when the television or radio is already "on." We may also observe that PowerPoint's presence possesses a similar persistence. "It's probably no accident that … a PowerPoint is 'always on'" (Atkinson, 2004a). Of course, PowerPoint is not "on" all the time in every classroom. However, like the television or radio being on in our homes, the relative frequency of "on"-ness of such technologies changes the experiential milieu of a home.

> I am listening to a talk, and while there is no PowerPoint presentation yet, I know there is going to be one. The equipment is set up, and the presenter was fiddling with it as I came in. I feel impatient for him to start it.

Even the presence of laptop and projection equipment evokes a certain expectation, a desire for a presentation beyond "just" the teacher talking. This student is impatient for the preamble to be over, for the teacher to get to the PowerPoint presentation where the "real information" is located.

Determined beforehand

Continuing down the corridor, I look briefly off to my right, through a doorway into a large lecture hall. Near the middle of the theatre, I spot a student with his hand raised. I hear the distant voice of the presenter, although I cannot make out his words. I pass by the room, and, glancing back through the other entrance, I notice the student is still holding up his hand.

PowerPoint presentations are determined beforehand. The slide deck, slide order, the manner of presentation (bullets, images) are all decided, arranged and composed in advance. Typically, the teacher and students walk through the slides in the order they arrive, one by one, to the end. To determine literally means to limit; to limit the scope or extent of; to fix or define the position. Material delivered via PowerPoint is almost invariably determined or programmed, that is, encoded or written ahead of time.

Of course it is the author of the slide-set who sets the course of the presentation beforehand. And while the author of the slides may very well be the teacher, when composing the slides, the author did not have the benefit of the actual teaching moment that the teacher is now dwelling in. The specific sequence he originally imagined may no longer "work" in practice:

> In my class yesterday, I asked a question and the teacher said that she'd be covering that a few slides ahead. But then several slides later I remember

> thinking, hey, she's forgotten my question. I felt annoyed and wanted to say something, but then I couldn't remember exactly what I was wondering about. The moment had passed.

Knowing what works in this moment, with these particular students, falls in the domain of tactful teaching. A tactful teacher is able to respond to the "unplannable" moments of situations, where, for instance, it becomes clear that the current tack is not being understood, and so a different approach is taken or other background information given. Good planning prepares for the unplannable:

> To plan is not just to program an inflexible script. To plan is to think through, to anticipate, to imagine how things might go, how these [students] might experience or see things…The more carefully an educator thinks through anticipated interactions with the [students], the more likely that he or she will be able to improvise on the planned script in order to be more responsive to the contingencies of a situation. A good teacher thoroughly plans lessons in order to be able to teach extemporaneously on the basis of planning. (van Manen, 2002, p. 188)

PowerPoint runs counter this more bricoleur dimension of the practice of teaching, instead compelling the lesson along its predetermined unidirectional course. However, a thoughtful teacher is willing to step away from the current slide set—perhaps using the B key to temporarily shut off the current slide—and improvise, using whatever means or materials are at-hand to tackle a new course if deemed pedagogically appropriate (and perhaps later to return to the original course lined up in the slide-set). Even the most thoughtfully composed PowerPoint presentation is not easily adapted to the unexpected question or the one that is "answered" several slides hence, but is more aptly responded to now.

PowerPoint's decidedly linear slide sequence is both strength and weakness. The predetermined deck helps map out a clear, singular course for both teachers and students

to follow. It is efficient, expedient. But this one-way-ness can also render a set of PowerPoint slides less valuable pedagogically if the students' learning ends up being forced mechanically along an inappropriate path. The slides tend to impel the "conversation" along a preset unidirectional course disregarding and sometimes blind to—witness a teacher entirely occupied with the projected image—the unbidden: the unsolicited question or unexpected comment. Importantly, the decision to diverge, jump ahead, or remain on course resides in the hands of the teacher. However, it is not difficult to recognize the influence exerted by the preset course of the slideshow, and the reticence of the teacher to abandon such a highly articulated (and thus difficult to alter) projected course.

Moving from split attention to transparency: parsing the shifty eyes

Coming immediately upon the next lecture hall entrance, I recognize the familiar voice of another colleague. Through the open door, I see a full roster of students occupying the theatre. I cannot see my colleague, but I feel certain he is using PowerPoint. I wonder why I would think this, tarrying a moment. A few students have laptops open on their desks. Of these, half are looking at their own little screens, half towards the front of the class. It appears one of them is typing. The balance of the students are sitting almost motionless, staring straight ahead. In the far corner a student has his head resting on the desk, asleep perhaps. My presence outside the lecture room door has inadvertently caught the attention of some students near the back; they look over at me curiously. I move on.

To attend is "to be present," "to listen to; heed," and "to be ready to serve; wait." Van Lennep (1987) describes attention as "a form of pregnant contact." It is "the manner in which we relate ourselves to the things on the basis of the meaning they have for us: that is, on the basis of the manner in which they are related to us as we perform a task" (p. 210). Students may often feel torn in their attention between the teacher and the PowerPoint medium. Sitting in a PowerPoint mediated class means that one has to attend

to both the slide text and to the teacher's person—words, vocal quality, body and facial gestures, eyes—at once.

> The teacher moves on to his next slide filled with several bulleted points, same design scheme. I read each one quickly, trying to make sense of them as he talks. I am surprised and confused they do not seem to match any of the sub-topics I have just heard. Maybe he's not presenting them in order. When I am done reading all the points, I shift my attention more intently back to the teacher. I now realize I have missed the last bit of what he has been saying again. He flips to the next slide, pauses to look at it briefly and, before I can finish reading the second point, he flips to the next slide. Once more, I feel as if I've missed something crucial. For a moment I try to hold onto what I just saw… but we are now looking at the screen print of a website he had referred to at the very beginning. The site is familiar to me, and I turn back to listen to him. He talks for a time now, occasionally looking to his paper notes beside his laptop. I listen carefully, glancing periodically over at the same projected image, wondering whether he will refer to it again or whether it is just "there." I am slowly grasping the direction of his talk. A question occurs to me and I jot it down. The screen suddenly darkens; a screensaver starts bouncing randomly about. He doesn't seem to notice.

The student is drawn towards both teacher and slide. In his attempt to attend to both, his eyes shift back and forth, back and forth. This shifting or split in attention is felt most acutely when the contents of the slide and the teacher's narrative do not bear a clear resemblance to one another. Here, the PowerPoint slides are perceived as disruptive to the process of understanding the speaker's meaning. The student is torn between attending to the speaker and to the slides, until finally he decides to stick with the speaker. Still, the screen continues to draw her attention periodically even though it is not being referred to by the speaker. Moreover, any change in the state of the projected slide, for example, a screensaver appearing, immediately draws the student's eyes away once more.

> When I don't understand, the slide text seems hard, impenetrable, not helpful, even "in the way" of my understanding. The slide holds out the false promise that

> I will comprehend something if I read it. Instead, I get caught in the text and panicked that I have meanwhile missed what the teacher was saying.

Here the student reaches toward the text in his desire to understand, but to no avail. He wishes he had instead chosen to attend to the teacher words. The teacher is perceived as the authoritative voice, not the slide.

> When I understand more or less what is being taught, I seem only to glance at the text, my eyes light on it, like confirmation.

At other times, the struggle to balance between the two competing objects of attention may lessen. In this instance, the eyes have found a dependable home with the presenter, but continue to "light upon" the slide periodically.

> I remember one day watching a lecture and realizing I had forgotten it was PowerPoint. I mean, I had forgotten about the particular slide I was looking at and was focusing on the content. It was partly, I think, because what was being covered required quite some thought and concentration on my part, but, strangely, I remember being conscious of the slides to that point.

In periods of full engagement with the presentation, the division between teacher and slide falls away, becoming "transparent" or seamless. No split in attention is experienced. The slide, and perhaps the teacher, are no longer competing objects or obstacles, but slip transparently into the meaningful landscape. The focus becomes the subject at hand, not the slide, not the presenter. Another student describes how he methodically reads the slides and listens to the teacher's talk:

> The next slide appears. I look at it briefly, scanning for the main words, the ones belonging to the main bullet set. I turn back to the teacher and listen. She is looking at us and occasionally glancing back, pointing at the slide, talking about the first point. While I am following her, I glance back at the slide. I take in a little more this time, the whole of the first point, and scan the second along with its sub-points, and the third again. I look again at the teacher, continuing to listen. Now she looks directly at the screen and reads out the first and second points as well as the three sub-points beneath. I read along with her. She turns back to us

> and expands on the second point and its sub points. I listen carefully for a time. Then, I look again at the slide, read it again quickly and turn back to the teacher. She reads the third point and I read along again, but I also glance back to the text above, reading the whole slide through quickly, now having a clearer sense of how they all fit with her talk, what they mean. She expands further on the third point. I "get it" and look ahead on my printout [of the slides] to see where we're going to next. I look again at the speaker. The next slide appears. By the time the slide changes, I have read it over three, maybe four times.

This student demonstrates astonishing concentration of attention to the content the teacher is presenting. He works persistently and systematically to understand all that the teacher is saying to him, and to situate that understanding within the context of the slide framework provided. The student brings printouts of the slides to class, jots down extra notes and looks ahead and back. He studies for exams mainly from the PowerPoint decks and printouts, using them to recall the "voice" of the teacher.

Idle hands, idle minds?

I come to the second last classroom before my office. Does everyone use PowerPoint now? No. Here is someone writing on the whiteboard. Math, I think. The teacher is talking as she writes. At some point, she stops writing, turns and addresses her class directly. Most of the students are still copying down the whiteboard material into their notebooks. The teacher moves to another section of the board, and erases it while she continues to talk. She turns back to the class, says something then sits on the desk at the front. She appears to be waiting. She points at a student whose hand is raised. While the student is talking, she moves back to the whiteboard and begins writing once more. The students too begin writing again in their notebooks.

The teacher using PowerPoint is relieved of the burden of writing. So often are the students. Of course, one of the hands of the teacher is now occupied periodically with pressing the mouse button, the keyboard or the remote control to evoke slide changes. But essentially, both hands are free, for example, to gesture in support of vocal articulation, or to point to a pertinent section of the slide.

Meanwhile, the hands of students in a PowerPoint lecture are often idle. Or

doodling. Or typing, perhaps annotating the slides provided, or surfing the web! In this sense, PowerPoint takes the writing and drawing part of teaching and learning out of our hands. PowerPoint relieves students of the burden of note-taking. Students are free suddenly to simply listen to the teacher, with the secure understanding that the notes will be made available on the web. Students can devote their full attention to listening and watching the presentation. But, when students know that they will not have access to the PowerPoint slides afterwards, they are required to adopt a different mode of attentiveness.

> I had decided not to make my PowerPoint slides available to my students. I told them that it is important for them to compose their own notes, to digest the material in their own way. There were objections. And, in the next class, a student stood up right in the middle of the room and started taking digital photos of my slides!

To not make one's PowerPoint slides available to students may be perceived as an unfair withholding of a precious resource. It is known by all students that a lesson based on PowerPoint has a product—an easily distributed commodity—associated with it: the .ppt file. Moreover, the content of these slides is sometimes used as the basis of exams.

To recognize what a profound change this is, we might examine the evolutionary "smaller" shift from chalk-and-blackboard to felt-pen-and-whiteboard. Both technologies allow the teacher to write words and draw diagrams on a large surface for students to see. But only chalk allows the teacher to truly shade her drawings (for example, by placing the chalk on its side and applying uneven pressure), to overlap and mix colors, thus helping students to "see" certain objects three-dimensionally. Of course, the teacher must possess a certain artistry to write and draw like this, but without colored chalk and

blackboard, the creation of such nuanced illustrations is simply not possible. Thus we may understand whiteboard technology as a movement away from shaded drawing in teaching.

With PowerPoint the teacher is no longer writing or drawing (except perhaps on the whiteboard). Still, why bother with aesthetically pleasing chalk drawings when we can create 3D animations that will illustrate better? A medical student describes a favorite lecturer:

> On the blackboard, using white chalk, he starts drawing the bones of the lower arm, the radius and the ulna. He puts labels on them telling us what they are. We label ours too on our sheets. The sheets are his hand-drawn diagrams of bones photocopied for us to use. In blue chalk, he draws on the top of the bones the deepest muscle telling us how that works. When he is done, he moves his own arm to show what it does. He points to the blue muscle. Then on top of that muscle he draws in yellow chalk the next muscle. We are also drawing and coloring each of these in with matching coloured pencils, labelling them just like he has. I jot a few notes beside each muscle as I am doing my drawing; my notes match the muscle color.

Writing-with develops a common understanding. Just as white board pens eliminate the possibility of beautifully shaded three-dimensional drawings of bygone chalkboard days (e.g. laying the colored chalk on its side, applying uneven pressure, etc.), so PowerPoint takes the writing and drawing part of teaching literally out of our hands. With PowerPoint, we maintain but a single touch evocation of the subject matter. The hand is involved in advancing the slides, no longer in the finesse of the writing or the aesthetic of drawing. Both teacher and student write less, draw less with PowerPoint. And they certainly no longer write or draw together. As a pedagogic medium, PowerPoint is forgetful of the mimetic moments of teaching and learning: when a student learns by imitating the gestures, writing, drawing, and thinking of the teacher. Merleau-Ponty

(1964) describes the phenomenological power of mimetic relations:

> Mimesis is the ensnaring of me by the other, the invasion of me by the other; it is that attitude whereby I assume the gestures, the conducts, the favorite words, the ways of doing things of those whom I confront…It is a manifestation of a unique system which unites my body, the other's body, and the other himself. (p. 145)

A student demonstrates keen insight into the value of mimetic moments of teaching:

> Last year I had a teacher who used PowerPoint to teach chemistry, But I did not like that. It helps to work through things together. When you actually see someone do it, it's a lot easier to understand than put up on a slide and just look at. It's important to be working something out on paper at the same time as the teacher is working through it on the board. You're having a shared experience; you're experiencing the problem together at the same time. When you're working through it together, that's a lot more powerful than looking over an already worked-out problem on a slide. So PowerPoint works for some kinds of knowledge and not others.

Time slides by—well, not exactly

As I proceed down the hallways, I suddenly remember some work I must do. Yet, I cannot help but peer swiftly through the window of the last classroom to my right. I see the students situated randomly about the classroom, hanging about in their seats. They seem bored and barely interested in the slide that is projected onto the front wall of the room. Even the voice of the teacher sounds grating and tired. I see a student glance at the clock...

The medium of PowerPoint seems to have its own sense of temporality that comes to dominate the entire lesson. One student says, "Sometimes, I am just dying for each slide to fall so that the lecture will be over because I can't stand sitting through it—waiting, and waiting for all of the slides to be done." Here, the slide-falls mark the slow passage of time. In a different lecture, the same student describes time disappearing with machinic expediency, "flying by at a fair clip". In moments of full engagement with the presentation, the slides, like clock-time, may pass by unnoticed. Sometimes the speaker flips disconcertingly quickly past several slides; at other times, a slide is allowed to

persist for a long while, forgotten perhaps, only to be replaced suddenly by a bouncing screensaver. At another time, the turning of the slides is experienced as "tortuous," falling dependably at regular but monotonous intervals.

Waiting on the turning of a slide is sometimes not unlike waiting on a red light to turn green in a long line-up of cars. The student sits in wait for the next slide to arrive, only to wait once more. How different from oral speech which seems to travel by—in its swiftness, leisure, or sluggishness—more like the continuous creep of the second-hand around an analog clock! Of course, both senses of time are present in a PowerPoint mediated class. But it is the slides—in their relentless sequential countdown, arriving and disappearing at irregular intervals—that officially measure the minutia of the presentation. Each slide-fall punctuates the current narrative; each new slide frames another set of speech moments.

Conclusion

PowerPoint can, in some of its finest pedagogical examples, maintain a strong, detailed curricular structure through which the teacher may navigate her students. Even so, such presentations may not easily accommodate the sometimes "unplannable and improvisational" responses requisite in interactive teaching-learning actions, situations and relations. By virtue of its predetermined, "published" state, PowerPoint may constrain or even preclude pedagogical sensitive dialogue. As well, PowerPoint may impose on the ambience of the class a certain dispositional style that may determine in a favourable or unfavourable manner how knowledge is internalized, understood, and how it is constitutive of the formative growth of the student. A student describes how her

reading of class materials is affected or "coloured" by the way information was originally presented to her in a PowerPoint lecture.

> When I'm reading the text[book], I notice I read it in the same framework as the PowerPoint presentation I was given—in points, bullet-points. I pick out the points that I heard in the lecture. It colours my reading of the topic.

As Walter Ong (1982) suggests, all technologies of information and communication—dating back to alphabetic writing—affect our *noetic* economies, our structures of thought. As we interiorize the forms inherent in a particular ICT—here authorized by a teacher's regular use of bullet-points in PowerPoint—our world begins to show itself differently to us. A new world opens, but too, such a technology may "encourage a sense of noetic closure" (Ong, 1982, p. 132): like printed text, PowerPoint "isolates thought on a written surface… self-contained and complete," yet unlike print, PowerPoint in the lecture hall is not "detached from any interlocutor" for its author still dwells in the room.

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CHAPTER 4:

PAPER III – POWERPOINT, HABITS OF MIND, AND CLASSROOM CULTURE[7]

> A medium is a technology within which a culture grows; that is to say, it gives form to a culture's politics, social organization, and habitual ways of thinking.
> (Postman 2000: 10).

Of late, PowerPoint is suffering from more than a few detractors. On the heels of Tufte (2003a) declaring PowerPoint "evil", the *Columbia* Accident Investigation Board partially implicates NASA's ubiquitous use of PowerPoint in the shuttle tragedy (Langewiesche 2003). And, despite musician David Byrne's (2003) much touted foray into PowerPoint "art", some sitting in the audience would agree PowerPoint presentations often leave something to be desired. As a medium for teaching and learning, PowerPoint increasingly finds its way to school classrooms, lecture halls, and conference podiums. However, while some questions are being raised by media scholars, PowerPoint usage among educators seems to be relatively unreflective and taken for granted.

Much of the educational literature on PowerPoint has focused on "how-to" advice and occasional exemplar uses in the classroom. Survey data suggest students find PowerPoint a useful cognitive tool and the provided electronic files and slide printouts helpful for review (Frey and Birnbaum 2002). Teachers using presentation software are described generally as "more organized." However, a recent poll of 4500 undergraduates in the US (Young 2004) reveals significant student unhappiness with the way technology,

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[7] A version of this chapter has been published: Adams (2006). *Journal of Curriculum Studies, 38*(4), 389-411.

particularly PowerPoint, is being employed in lecture halls.

From a visual communications perspective, Tufte (2003b: 22) calculates "the PP [PowerPoint] slide format has probably the worst signal/noise ratio of any known method of communication on paper or computer screen." This software package "elevates format over content" (Tufte 2003a), turning everything into a sales pitch. Tufte maintains that PowerPoint supports a cognitive style inconsistent with the development of higher analytical thinking skills. Turkle (2004: 102) defers judging "a product of the cultural assumptions of the Western corporate boardroom," yet she, too, has little doubt PowerPoint "affects our habits of mind."

There has always been a deep link between humankind and our machines. Our tools or techne extend our reach, abilities, sensory perception, locomotion, thinking and understanding. In adopting a tool, we invite it to enhance, or more dramatically, transform what we do and how we perceive the world. Wielding his famous hammer, Heidegger (1962) points out that "the less we just stare at the hammer-Thing, and the more we seize hold of it and use it, the more primordial does our relationship to it become" (p. 98). Each transformation is sealed quietly as the latest "life-altering gadget" (Richer, 2004) is woven transparently into the fabric of our lives, as new activities and thoughts are enabled by it and a measure of dependence is felt. The adopted tool becomes a necessary appendage, a happy burden (Borgmann, 2002), allowing us to sustain our lives in the style to which we have become accustomed.

Thus, it is naïve to perceive the new technologies arriving in classrooms as "just an assemblage of machines and their accompanying software. [Each new technology]

embodies a form of thinking that orients a person to approach the world in a particular way" (Apple, 1991, p. 75). As teachers seize the PowerPoint hammer as a tool to enhance teaching practices, some questions should be addressed: what forms of thinking, what styles of teaching and learning are educators and students becoming accustomed to? Does PowerPoint privilege particular modes of knowing over others? And how exactly might PowerPoint affect habits of mind?

"Habits of mind": Cathedrals and other architectures of experience

The architectural spaces we design, build, and inhabit decide in subtle and sometimes significant ways our activities thereafter. For example "when we walk off a crowded street into a cathedral, our whole demeanour changes even if we are not alert to it. We relax in its cool darkness that solicits meditativeness" (Dreyfus & Spinosa, 2003, p. 346). Churchill suggests an even stronger thesis: "we shape our buildings and afterwards, our buildings shape us." But it is not simply architectural structures that so shape us. All objects invite us to extend or change our relationship to our world in one way or another. These enhancements or transformations can be minor to profound, but the full spectrum of effects is often unanticipated and unseen until the object is integrated transparently into our lives. And by then, life is different; we may wonder only how we lived without this or that gadget. Mobile phones, for example, have altered dramatically the way some of us stay in touch with one another, challenging and reframing previously stable notions such as availability and autonomy, and public and private spaces (Arnold, 2003).

Illich (1997, p. 64) coins the phrase *le milieu technique* to refer to the irresistible

embrace of the high technology environs we find ourselves dwelling in today. The technological milieu is shaping substantially—insinuating itself, habituating us and simultaneously reinterpreting—how we act in and perceive the world. To understand how this occurs, Illich asks us "to listen to what the objects of technology say, rather than do" (p. 64). To "hear" what an object of technology might be saying to us we must enter the realm of lived experience, and orient ourselves to prereflective or "pathic" knowing.

Within the situated, relational, embodied context of lived space, all objects may be heard as invitations. Straus (1966) calls this invitation the pathic quality of a thing. Van Manen (1997) illustrates: "cool water invites us to drink, the sandy beach invites the child to play, an easy chair invites our tired body to sink in it" (p. 21). In an analogous fashion, Turkle (in Coutu, 2003) suggests PowerPoint "is not just a tool but an evocative object that affects our habits of mind." What then is PowerPoint's vocative invitation to teachers, to students? And how might this presentation software shape "our habits of mind"?

The PowerPoint invitation

Before tackling the question of how PowerPoint might shape our habits of thinking, I shall consider briefly the invitational address PowerPoint makes to the teacher as he or she constructs a PowerPoint presentation. [I necessarily overlook the experiential subtleties that characterize PowerPoint's invitation to the teacher in the immediacy of the classroom, as well as the multifaceted address this medium presents to students: a careful exploration of these topics would extend well beyond this paper. However a cursory inquiry will give an initial flavour for the complex vocative appeal PowerPoint makes to

the teacher as well as provide a glimpse of his or her response to that appeal.]

It must be first acknowledged that the PowerPoint software package is a product designed primarily for the Western corporate marketplace. That the special interests and demands of this sector are built into virtually every design decision of PowerPoint's software architecture comes as no surprise. Indeed, this is hardly a failing of PowerPoint, but an historical fact. A useful analogy is to compare the architectural design of an office building with that of a school. Both buildings are recognized as different structures with different functions. In using this Microsoft Office productivity software tool, a teacher is in some ways charged with refashioning a space especially designed for office use into a liveable classroom.

Entering the PowerPoint application, the teacher is immediately invited to construct a presentation in one of the following manners. He or she may begin with the "blank" presentation consisting of a title slide, followed by a series of regular slides, each offered with a large, centered title above a box of bulleted, textual information or points. There are variations on this theme, of course. The presentation author is also invited to select a "design template," one of a variety of professional quality, business-friendly backgrounds, with the option to vary the color scheme. PowerPoint's third suggestion for new presentation creation is the AutoContent Wizard. Constructing a short teaching presentation using the AutoContent Wizard can provide memorable demonstration of how PowerPoint's user-friendliness may at moments turn heavy-handed and highly prescriptive.

Returning to the typical "blank" default slide (see figure 1.), PowerPoint presents

the teacher with a relatively straightforward invitation. There are two enjoinders: "Click to add title" and "Click to add text." The slide-set author is thus invited to first title the slide, and then to add information in bulleted format. Indeed, to not incur bulleted text at this juncture, the author must "erase" the bullet and adjust the text placement, or deselect bulleting using the bullet tool, or delete or ignore the bullet text box and insert a regular text box in its place.

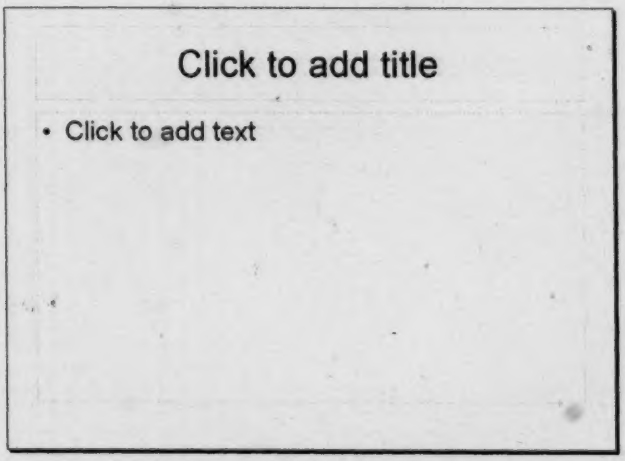

Figure 1: PowerPoint default slide

Each of these work-around actions requires the user to have some familiarity with this or similar software. Still, given the stipulation that the slide text is readable to all in the room, some abbreviation of the presentation material seems quite natural. Thus in preparing a presentation using PowerPoint, the teacher is confronted with these questions: First, what information should be presented on each slide? Clearly information must be broken into discrete bits to fit on each slide. Second, how might each segment of information be best represented? PowerPoint suggests bulleted text.

Of course, PowerPoint is merely inviting, not compelling, the author to format his

or her knowledge as bullet points. Other formats and approaches may be tried. Yet, it must be admitted that the invitation of the default slide—to title and bullet—is taken up by many. As a general rule, heavy reliance on default patterns in design—a feature common to many user-friendly software packages—yields products bearing a similar look-and-feel regardless of the creator. Some architectural software packages, for example, "urge architects to create roofs with lots of little peaks, under each of which arched windows are now the requisite fashion" (Searls, 1998, ¶3). The result is a lot of houses that look remarkably similar to one another, each being a variation on a few default themes rather than truly original creations. While such software may allow homes to be build more inexpensively (less architect time is presumably incurred, and standardized materials are manufactured more cheaply "en masse" corresponding to these defaults), templating may sometimes get in the way of responding creatively to individual homeowner needs and aesthetic preferences. On the one hand, PowerPoint default slides and templates ease the process of organizing a presentation, particularly if one is willing to and adept at bulleting information. On the other hand, teachers wishing to tailor a presentation to match their personal teaching style may need to actively work around the defaults, which may sometimes take more than a modicum of thought and know-how.

Thus in seizing hold of PowerPoint as a tool, the teacher is simultaneously aided but also enmeshed and constrained by the particular design decisions embedded in this software. PowerPoint is, after all, part of a sophisticated, preprogrammed (that is, anticipated) conversation taken up by and with the teacher, urging him or her to organize and present knowledge in a certain way. This particular way is evoked primarily through

ease of access to default patterns or templates. Moreover, the particularity of this way—that is, the dialogue that develops between PowerPoint and the author working towards representing the subject matter at hand, and culminating in a .ppt file—may range from being highly controlled by the software (e.g. the AutoContent Wizard) to more teacher-decided (e.g. starting with a "blank Presentation" and flexing the software to meet one's own teaching style or aesthetic sensibilities).

Indeed, it may only be the creative teacher, the experienced rhetor, or the thoughtful, practiced user who thinks to venture much beyond the PowerPoint defaults. The unassisted novice, the new teacher, or busy lecturer may be more inclined to accept as given the PowerPoint defaults in forming their presentation, and subsequently the ideas about how they will present their material. And this is naturally so because, particularly when we are navigating an unfamiliar environment or are under time constraints, we gladly accept or fall into the most accessible, appealing invitation at-hand. In this case, "ease of use" equates with high invitational appeal. We are inclined to choose the option that seems to offer the simplest, quickest path to our desired end—a good teaching presentation. With these considerations in mind, I turn now to the notion of habits, and "habits of mind."

How can PowerPoint shape our "habits of mind"?

A habit is "a constant, often unconscious inclination to perform some act, acquired through its frequent repetition; an established trend of the mind" (Houghton–Mifflin Dictionary). A habit is that which we find ourselves doing. We become accustomed, habituated to things; we get used to them over time. Habit comes from the

Latin verb, habitus, meaning to hold, have, or possess. Taking hold of an object, we also take up residence in it; we inhabit it, but it also inhabits us. In the words of Merleau-Ponty (1962/2002), "To get used to a hat, a car or a stick is to be transplanted into them, or conversely, to incorporate them into the bulk of our own body. Habit expresses our power of dilating our being in the world" (p. 142). Habit allows us to expand and settle into the world, to extend ourselves. For example, to try writing with a keyboard is at first awkward. So much time is occupied looking at the lettered keys and checking the result on the screen; it is quite impossible to follow a complete train of thought. Over time and perhaps facilitated by deliberate training however, our fingers gradually learn the landscape; they become habituated to the keyboard environment. Merleau-Ponty calls this acquired habit or skill "knowledge in the hands." Our habituated fingers now serve us silently, falling transparently into our background, allowing us to settle into the higher-level business at hand: writing. Now, try replacing the familiar QWERTY keyboard with the unfamiliar Dvorak. Our poor fingers will demand attention immediately! Then once more (for a time) the activity of writing will not come so easily.

Habit "gives our life the form of generality and prolongs our personal acts into stable dispositions" (Merleau-Ponty, 1962/2002, p. 146). Our bodies tend naturally towards the equilibrium of habit, forming patterns of familiarity and thus freeing us to build upon and project ourselves well beyond "knowledge in the hands," to expand our being in the world. What is it then to become habituated to, to get used to PowerPoint?

With each new slide that the teacher composes, a certain habit, a knowing in the hands is developing, slowly gathering confidence and transparently settling in as pattern.

PowerPoint helps in the organization of a clear, concise, and complete lecture from start to finish. In the process, the teacher may take up PowerPoint's tempting invitation to reconstruct subject knowledge as bulleted information. He or she may be unused to arranging lecture materials in this manner. In doing so, the teacher becomes more and more accustomed to and adept at abbreviating the subject knowledge and its practices in short, pithy phrases rather than composing full sentences. Parker (2001) humorously notes how PowerPoint indeed seems to promote a certain mode of thinking: "Last week I caught myself planning out (in my head) the slides I would need to explain to my wife why we couldn't afford a vacation this year" (p. 76). As the teacher seizes hold of PowerPoint as a tool of teaching, he or she necessarily begins to think in terms of the form it suggests. At minimum the teacher must think in slides, reconfiguring his or her knowledge in the new 4:3 rectangular landscape delineated by PowerPoint. The software readily assists in this project by inviting the teacher to consider certain formats: to title each slide, to reform subject material as abbreviated, bulleted points.

Of course, PowerPoint allows for the representation and later presentation of knowledge in other modes besides point form. For example, if the teacher has ready access to related digitized images, sounds or videos, these are easily imported and integrated as slides or parts of slides. Complex narrative exposition or story may be distributed across several discrete slides to be later sewn back together through the continuous flow and knowing presence of the teacher's voice, or perhaps situated as an extemporal prompt on a single slide from which the presenter digresses and later returns to. Atkinson (2005), writing primarily to the business audience, entreats presenters to

move "beyond bullets" and invent presentations that take advantage of the tremendous possibilities the PowerPoint slide palette provides.

Nonetheless, it is important to notice how PowerPoint users seem to fall into certain ways of doing things, patterns of behaviour that suggest themselves right from the beginning. We talk about falling into step, falling in line. In a sense, falling is something that happens to us, or we happen upon it, something we find ourselves in or doing (as in falling in love). Habituation can also be exactly this: slipping into the easiest, most accessible, efficient path and seldom thinking to diverge from it. In this way, habit is both ability and disability. I have already explored a few of PowerPoint's appealingly simple invitations to the new user. Conducting an informal survey of PowerPoint files from a variety of college courses, there is little surprise then to see a preponderance of slides displaying bulleted text, with occasional graphics or Clipart, and most set against Microsoft provided templates.

Quite unintentionally from the Microsoft software designers' perspective, PowerPoint's user friendliness (that relies on default patterning) is simultaneously foreclosing other forms of knowledge through lack of habitual (easy) access. Software designers may recognize here one of their core design dilemmas: how to accurately and sensitively balance ease of use and thus adoptability against early constraint and lack of user freedom? A key challenge for the software designer is how progressively to reveal all of the power of the software through short shallow transitions, as needed, and then to make it obvious and easy later on how to access further transitions when the user is ready to exercise new possibilities. Often the trade-off between power and early adoptability

may result in sub-optimal, overly constrained conditions for anyone who is not a master. Of course, this is also a core teaching and learning challenge: how to progress each student from no or minimal skill to mastery with the least effort? PowerPoint's AutoContent Wizard is just such an attempt at a software answer to this problem with predictable results. Default patterns are another way to provide users with early success, although through less directive means than a typical wizard. But defaults also impose constraints. Defaults are decisions made by the software designer on behalf of the user, so that the user can get on with the task at hand.

For educational use in particular, it must be borne in mind that the default settings have been chosen for business and sales audiences. Again, it is not that PowerPoint necessarily precludes other ways of presenting ideas in a wide variety of knowledge forms; but rather, these other ways are less represented quite simply because it may not be immediately apparent to the teacher how to form them in this medium, how to step away from the default settings and explore other possibilities. To do so requires thoughtful initiative, that is, wakefulness to the habituating trends embedded in PowerPoint's user interface and a willingness to flex it in other directions, or to choose not to use it when it is inappropriate to the teaching task.

Thus far, I have painted a rather accusatory portrait of PowerPoint, suggesting its architecture exerts a kind of soft determinism upon a sleepy teacher-user, by turns inviting him or her to try certain ways of preparing a lesson or lecture (and not others). I have further proposed that through widespread user habituation to the particular presentation practices inherent in PowerPoint default slides and templates, this software

may be enacting real changes in the way teachers think about their subject matter and how their discipline is subsequently represented and presented to students. Such determinism, that is, "the imposition willy-nilly of new cultural grounds by the action of new technologies," say McLuhan and McLuhan (1988), "is only possible while the users are 'well-adjusted'—sound asleep" (pp. 127-128). The inevitable tendency of any given technology to enact its "vortex of side-effects" is counterbalanced by each user's willingness to pay attention, to remain focused on the purposeful task at hand—in this case, teaching.

McLuhan (1964) suggests all media, indeed, all artefacts, exert invisible "lines of force" which tend to develop into predictable trends. It is only by

> standing aside from any structure or medium that its principles and lines of force can be discerned. For any medium has the power of imposing its own assumptions on the unwary. Prediction and control consist in avoiding this subliminal state of Narcissus trance. But the greatest aid to this end is simply in knowing that the spell can occur immediately upon contact, as in the first bars of a melody. (p. 15)

Above, I have made an initial exploration of the first bar of PowerPoint's melody. To venture further, McLuhan provides a framework for discerning the overall effects any artefact exerts on both its active and passive users.

McLuhan's power points

Laws of Media is McLuhan's attempt to encapsulate the efforts of phenomenologists like Hegel, Merleau-Ponty and Heidegger to reveal the hidden effects of technologies by employing a relatively simple formula. He poses four questions of every technology:

- What does [the medium] enhance or intensify?

- What does it render obsolete or displace?
- What does it retrieve that was previously obsolesced?
- What does it produce or become when pressed to an extreme?

(McLuhan & McLuhan, 1988, p. 7)

The responses to these questions, known as the four laws of media, are then composed as a tetrad held in a complex set of poetic tensions. The tetrad intends to focus attention on dynamic "situations that are still in process, situations that are restructuring new perceptions and shaping new environments, even while they are restructuring old ones" (p. 116). Thus the tetrad indicates simultaneous (not sequential) effects.

> All human artefacts are human utterances, or outerings, and as such they are linguistic and rhetorical entities. At the same time, the etymology of all human technologies is to be found in the human body itself: they are, as it were, prosthetic devices, mutations, metaphors of the body or its parts. The tetrad is exegesis on four levels, showing not the mythic, but the logos-structure of each artefact, and giving its four "parts" as metaphor, or word. (p. 128)

In composing a tetrad, it is helpful to reflect on the more extreme examples—both positive and negative—as well as on the more mundane of a technology's uses, in an effort to tease out unusual textures, the hidden trends. The purpose is to gain insight into how a given technology can both enhance and disrupt, and ultimately reshape current practices in unexpected ways.

Below, I venture my own tetrad for PowerPoint (*figure 2.*). I then explore some of the dimensions of the PowerPoint "utterance" through a series of textual vignettes. Each section is intended to declare not certainty but tendency of effect, drawing attention to both worrisome shoal and pedagogical possibility inherent in this software. Like McLuhan, I take poetic license with these observations, playing with figure then ground

in an attempt to loosen some of the threads binding and sometimes blinding thinking. In doing so, my focus resides primarily on the tensions tugging between four medial laws of enhancement, retrieval, reversal and obsolescence, for it is here that PowerPoint's dynamic lines of force are to be revealed.

A PowerPoint tetrad

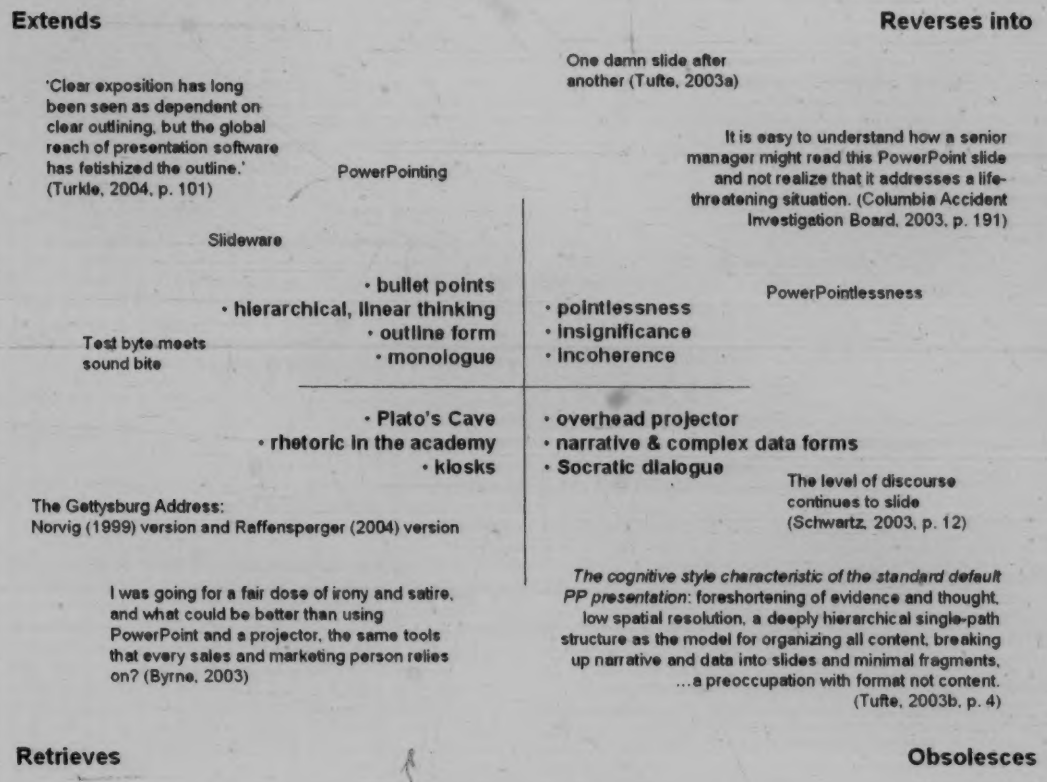
Extends
Reverses into
'Clear exposition has long been seen as dependent on clear outlining, but the global reach of presentation software has fetishized the outline.' (Turkle, 2004, p. 101)
PowerPointing
One damn slide after another (Tufte, 2003a)
It is easy to understand how a senior manager might read this PowerPoint slide and not realize that it addresses a life-threatening situation. (Columbia Accident Investigation Board, 2003, p. 191)
Slideware
• bullet points
• hierarchical, linear thinking
• outline form
• monologue
Test byte meets sound bite
PowerPointlessness
• pointlessness
• insignificance
• incoherence
• Plato's Cave
• rhetoric in the academy
• kiosks
• overhead projector
• narrative & complex data forms
• Socratic dialogue
The Gettysburg Address: Norvig (1999) version and Raffensperger (2004) version
The level of discourse continues to slide (Schwartz, 2003, p. 12)
I was going for a fair dose of irony and satire, and what could be better than using PowerPoint and a projector, the same tools that every sales and marketing person relies on? (Byrne, 2003)
The cognitive style characteristic of the standard default PP presentation: foreshortening of evidence and thought, low spatial resolution, a deeply hierarchical single-path structure as the model for organizing all content, breaking up narrative and data into slides and minimal fragments, ...a preoccupation with format not content. (Tufte, 2003b, p. 4)
Retrieves
Obsolesces

Figure 2: PowerPoint tetrad

Pointing powerfully

PowerPoint enhances, quite literally, the ability or power to point. Through this software, the teacher can now point more accurately, vividly and rapidly at text and image—digitized photographs, diagrams, charts, film clips, web pages. Indeed, pointing,

or the act of signifying, is a central activity of pedagogical practice. Teachers point things out, illustrate different points of view, and get straight to the point. They may even point wordlessly to the student with raised hand, not knowing or having forgotten his or her name. Or they may point enigmatically at the mere existence of something, the sheer wonder of something unnameable. One way or another, teachers hope they are pointing their students in a right or worthwhile direction.

A thing does not exist in a meaningful sense until it is signified, that is, an object has no significance until it is pointed out, at, or to. Our most basic communicative technology, language, may be understood as a sophisticated pointing device. Words themselves are not the actual things they name, rather words point to things. The word "chair," whether uttered out loud or rendered in print, is not itself a chair, but points to the *eidos* chair. "Chair" calls to mind or refers directly to an object used for sitting on. As such, naming evokes or calls a thing into existence. Pointing, whether accomplished with a finger or through the extension of some pointing instrument—linguistic, artistic or otherwise—brings a thing to attention, and thus to significance.

The activity of pointing need not be direct. A metaphor, for instance, points to a thing by creating a poetic tension between two unlike, yet like, things. The metaphor, "teacher as midwife," points by juxtaposing two unlike things to indicate a third other, in this case, a novel understanding of the role of a teacher. A metaphor is thus a "reference to absence" (Levinas, 1996, p. 35), a pointer to something not yet visible, highlighting the assertion that a thing is not present until it is in some manner pointed to or at. A true or lively metaphor, one that has not yet fallen into the common lexicon, is a pointer or

referent to that which currently has no direct label and is thus not usually perceived by others.

PowerPoint itself does not point to actual things, but facilitates the projection of pointers, for example, words and images. PowerPoint allows too for the projection of indirect pointers like metaphor. However, this provision has limits. Metaphor refers to an absence through the relatively simple juxtaposition of two unlike objects. Metaphor orients by pointing at two things at once; these two referents can be easily listed as a single point of bulleted text. However, not all knowledge is so economically referenced.

If it isn't on the PowerPoint, it probably isn't important

Consider this anecdote:

> I am listening to a talk, and while there is no PowerPoint yet, I know there is going to be one [a PowerPoint presentation]. The equipment is set up, and the presenter was fiddling with it as I came in. I feel impatient for him to start it.

This student is impatient for the presenter to fire up PowerPoint because, as he also relates, that is where the "real information" is located. The preliminary "talk" is mere preamble, not substantial. If it does not appear on a PowerPoint slide, it is indeed not significant.

For many students, PowerPoint slide sets have become an efficient way to prepare for examinations (Frey & Birnbaum 2002). This presumption is accurate in a very practical sense. Knowledge that lends itself easily to a PowerPoint slide likely translates well into an exam question. Whether the teacher is intending it or not, PowerPoint's message of economy to the students is: if it is does not appear on a slide, it is probably not important since it did not warrant being pointed at powerfully. Here "important"

equates with high probability of appearing on a test. The overall effect is the devaluing knowledge presented orally or via media other than PowerPoint, for example, on the whiteboard.

The 4:3 tabula rasa

Clearly PowerPoint is displacing overhead projectors and slide carousels. The whiteboard is also partially eclipsed, whether literally by a pull-down screen or when it is usurped as a projection surface. Nonetheless, the whiteboard is only partially obsolesced for it is sometimes used in conjunction with PowerPoint.

PowerPoint favors information that can be displayed on a single projected 4:3 rectangle. Knowledge that requires more space is disadvantaged. Consider a complex table of data. Such a display must either be abbreviated—and thus suffer loss of information—or be excluded. How to include a story on a slide? Distributing the associated text over several slides literally breaks it into fragments, disturbing its natural cohesion and thus coherence. On the other hand, stories in books are broken across many pages which are then rewoven into a seamless whole by the reader. Is there a difference? What if we reduce a story to point form? How does that affect the telling, and equally, the received meaning of the narrative?

Some narrative forms simply cannot be rendered in PowerPoint at all. Stanford University professor, Clifford Nass (in Parker 2001) reluctantly admits that he

> actually removed a book from my syllabus last year because I couldn't figure out how to PowerPoint it. It's a lovely book called "Interface Culture," by Steven Johnson, but it's very discursive; the charm of it is the throwaways. When I read this book, I thought, my head's filled with ideas, and now I've got to write out exactly what those ideas are, and—they're not neat. (p. 76)

In this way PowerPoint obsolesces some complex narrative and data forms in favour of those that are easily abbreviated or otherwise lend themselves to display on a series of slides.

A specialized anecdotal form that makes regular appearances on PowerPoint slides is the comic. Single panel comics are decidedly best. They can be projected legibly, fitting well within the 4:3 PowerPoint default frame. The message is textually short, yet can often pierce straight to heart of an issue. Comics running several frames are used too. But longer comic sequences are seldom used although they are certainly available. What we may observe here is the privileging of information that is pithy (of few words and thus legible), requires little context, and happens to fit nicely within a single, 4:3 frame.

Focus and out of focus

Picking up a camera and peering through its viewfinder, I am looking at the world in a very particular way. For one thing, my view of the world is suddenly reduced to a small rectangular image. And I am necessarily pointing the camera at something or someone. In the same moment, I am also *not* pointing at the rest of my world. I have but a single point of focus, or focal point. The rest of the world now resides more or less out of my focus. Practiced photographers, of course, learn to keep both eyes open: one looking through the viewfinder, the other still gazing softly upon the rest of the world. Nonetheless, the camera is pointing. The photographer takes up an attitude of studied focus towards his or her subject, using the camera apparatus to organize their field of vision. The world is experienced through the lens of the camera.

Similarly, students witness a PowerPoint version of the teacher's rectangular viewfinder writ large. Snapshot after snapshot of the teacher's perspective is presented to the students, each slide portraying a particular *point* of focus or interest in the subject matter. The rest of the teacher's world is temporarily unavailable, and is thus out of focus—almost. "Almost" because the single point of vision is enhanced, made more comprehensible, and given richer context as the figure of the teacher steps into the picture as pedagogical presence. In this way, the PowerPoint slide may serve as a source of shared perception, enabling each student the possibility of vivid entry into the world the teacher has chosen to point at.

PowerPunctum

In his *Camera Lucida*, Barthes (1981) names two elemental qualities attributable to a photograph in relationship to the viewer: *studium* and *punctum*. These qualities describe the viewer's impression or response as they look at a given photograph. Most photographs have *studium*: "I glance through them, I don't recall them; no detail ever interrupts my reading: I am interested in them (as I am interested in the world), I do not love them" (p. 41). They are "unary," literal representations of their subject. These photographs, Barthes explains, objectify their subject.

The presence of *punctum* however, penetrates beyond the ordinary. *Punctum* is the photographic detail that catches the eye, interrupts, disturbs, and evokes an unexpected mood—pensiveness, delight, or even tenderness. It is "that accident which pricks, bruises me" (p. 26). *Punctum* returns subjectivity to the object. A photograph with *punctum* "annihilate[s] itself as medium to be no longer a sign but the thing itself." Here

the pointer momentarily becomes a thing in and of itself. With PowerPoint, it may be reasonable to inquire of each slide: is there *punctum* here? Through this slide, am I as teacher touching, penetrating, and evoking my students' interest? If not, then what is its point?

"Knowledge in the hands"?

In as much as PowerPoint enhances the power of the teacher's pointer finger, the student's hands fall strangely passive in this equation. To observe a classroom with PowerPoint at its center is often to watch a group of students with idle hands. Traditional note-taking becomes obsolete as lecturers make their PowerPoint slide-sets available. Students no longer need to be divided between the two complex tasks of note-taking and listening, but are now released to give their undivided attention to the lecture. The teacher's hands are also occupied differently: pressing the Enter key or mouse button or remote to advance to the next slide. In between, these "knowing hands" find themselves freer with PowerPoint, to gesture, to point, or even to experience uncertainty in their idleness. Yet, while the teacher's index finger is dramatically enhanced, the flowing articulation of the writing hand—of both student and teacher—is atrophied.

Teaching product or process?

Borgmann (1984) claims modern technology is decisively separating means from ends. The activities or processes of creating things are progressively being hidden from our view and replaced with the more singular activity of procuring end products or commodities. "What distinguishes a [modern] device is its sharp internal division into a machinery and the commodity procured by that machinery" (p. 33). As a result, some of

the practices associated traditionally with creative teaching activities are ostensibly disappearing in the wake of sophisticated technologies.

The PowerPoint file is clearly a lecture product that students are increasingly expecting to procure from their teachers. As illustrated above, this file is essentially a product of the teacher's thinking in dialogue with the PowerPoint software now solidified in single framed, sequential snapshots. Thus the student witnesses more the projected product, and less the *process* of the teacher's knowledge-in-action. Then again, each slide has the potential to trigger the embodied insights of the experienced practitioner in the immediacy of the now. This *punctum* or evocative capacity can "save" a PowerPoint presentation from being merely a product.

Yet it may be that "the ultimate success of teaching actually may rely importantly on the 'knowledge' forms that inhere in practical actions, in an embodied thoughtfulness, and in the personal space, mood and relational atmosphere in which teachers find themselves with their students" (van Manen, 1995, p. 49). Thus a primary concern here is bypassing the experiential dimensions of practical knowledge, both in the discipline of the subject as well as in teaching practice. When educators try to capture and translate aspects of their tacit understandings to a series of slides, there is the danger of "short circuiting" the normally contingent enactments of their ordinary teaching and professional actions. Of course, "shortening the circuit" is precisely what devices of expedience, like PowerPoint, are designed to do: eliminate "unnecessary" sub-steps (via hardware or software solutions) to allow the most efficient path to an end. Indeed, why struggle with MacBeth when I can "get" the basic idea from Coles or Cliff Notes?

Optimizing delivery, disrupting dialogue

When we think of a presentation, we do not often think of it as a conversation. But in fact students also dwell in their own thoughts and feelings in response to the teacher's tonal quality, word choice, gestures, and, of course, to the ideas and images evoked. In a sense, the student carries on a listening sort of conversation with the teacher, just as the tactful teacher has a way of listening in a talking sort of way. "Successful communication occurs only if the listener, instead of following the verbal chain link by link, on his own account resumes the linguistic gesticulation" (Merleau-Ponty, 1973, p. 29). In this manner the student does not merely take in what is being said by a lecturer, but engages in an inner dialogue with the lecturer. The student *settles into* (becomes immersed in) the lecture conversation through listening, that is, through linguistically participating albeit in many cases silently. One student describes the conversational nature of a lecture in this way:

> I had a lecture where it was just someone talking to us. It was weird. It took a lot more effort to stay focused without the visuals. It was odd. I mean, here we are just having a conversation. No one spoke but the lecturer really, but it still felt like a conversation. PowerPoint is different somehow. Actually, it turned out to be a great lecture.

How might PowerPoint presentations be "different somehow"? Another student recalls a PowerPoint lecture where he is preoccupied with making sense of slides apparently incongruous with the teacher's talk:

> He moves on to his second slide filled with several bulleted points, same design scheme. I read each one quickly, trying to make sense of them as he talks. I am surprised and confused they do not seem to match any of the sub-topics I have just heard. Maybe he's not presenting them in order. When I am done reading all the points, I shift my attention more thoroughly back to the lecturer. I realize I have missed the last bit of what he has been saying again. He flips to the next

> slide, pauses to look at it briefly and, before I can finish reading the second point, he flips to the next slide. Once more, I feel as if I've missed something crucial…We are now looking at the screen print of a website he had referred to at the very beginning. The site is familiar to me, and I turn back to listen to him. He talks for a time now, occasionally looking to his paper notes on the podium beside his laptop. I listen carefully, glancing periodically over at the same projected image, wondering whether he will refer to it again or whether it is just 'there.' I am slowly grasping the direction of his talk. A question occurs to me and I jot it down. The screen suddenly darkens, a screensaver starts bouncing randomly about. He doesn't seem to notice.

This student struggles to become engaged. He is caught between attending to the content on the slides or to the lecturer's speech. At last he finds himself drawn into the talk, but is once more momentarily interrupted by a dissonant image on the screen. In this case, the projected images and text seem to detract from rather than enhance the experience.

Another student finds herself surprisingly unaware that she is looking at a projected PowerPoint slide, and is instead caught up in learning something quite difficult:

> I remember one day watching a lecture and realizing I had forgotten it was PowerPoint. I mean, I had forgotten about the particular slide I was looking at and was focusing on the content. It was partly I think because what was being covered required quite some thought and concentration on my part, but, strangely, I remember being conscious of the slides to that point.

At the hand of a PowerPoint enhanced lecture, this student finds herself (surprisingly) engaged with the subject. Here the technology falls transparently into the background, supporting her learning experience. This moment is not unlike that of watching a foreign movie with subtitles. Initially a dissonance may be experienced between attending to the movie (the moving images as well as the spoken foreign language with its nuanced expressions) and reading the subtitled text, but eventually most people adjust to the divided purposes and perceive the movie as a whole. However, with PowerPoint, such dissonance levels vary considerably across presentations and among different students,

sometimes regularly disrupting a student's ability to enter or carry on the lecture conversation.

Understanding teaching as hermeneutics, as conversation or dialogue, though, is very different from thinking of teaching as delivery. As a teaching tool, PowerPoint reifies the notion of teaching as "presentation, not conversation" (Turkle, 2004, p. 101), favouring predetermined monologue and teacher-centred pedagogy over unpredictable dialogue and other pedagogical forms. Socratic dialogue, a form of teaching and learning which involves the flowing juxtaposition of like and unlike ideas over time in complex discourse, does not easily transfer to a predetermined slide format. True dialectic occurs in process, and thus can never be wholly anticipated in advance. On the other hand, it is quite possible for a thoughtful teacher to present a series of slides to purposefully invite dialogue. PowerPoint may thus become a springboard to discussion rather than solely a mechanism to optimally deliver a preset body of text and images.

"The roundness of an apple"

Exclusive use of PowerPoint obsolesces tactile contact with substance, and more generally direct experience or apprehension of the world. With PowerPoint there is even less impetus, than say with a whiteboard alone, or even overheads, to bring the artefacts of the subject to class. To study apples, for example, I may easily collect together and project via PowerPoint, images of different kinds of apples, apple seeds, apple trees in bloom, in fruit, and in winter. I may label them, list them. I can display a clear, predictable cross section of an apple, with parts named and indicated accurately. I need not incur the messiness of knife and fruit, or the clumsy inaccuracy of my finger

indicating the parts to my gathered students. Indeed, I may even include a digital video recording demonstrating an apple being cut open, and add pointers to label the parts exactly. PowerPoint facilitates the collection and subsequent access to a tremendous amount of information about a subject in a fast, efficient, clean, and safe fashion.

But as the actual is more and more replaced by the virtual, some experiences, some ways of knowing are being lost. Lusseyran (1963), blinded as a child, describes another way of knowing an apple, and the things of the world, directly through his hands.

> If my fingers pressed the roundness of an apple, each one with a different weight, very soon I could not tell whether it was the apple or my fingers which were heavy. I didn't know whether I was touching it or it was touching me. As I became part of the apple, the apple became part of me. And that was how I came to understand the existence of things. (p. 27)

The sweet smell of an apple, the smooth, cool texture, and sensation of its roundness, are essentially unavailable to the student learning about apples via projected image and text alone. The activity of pointing occludes (if only momentarily) the knowing touch. This occlusion is extended when the finger is pointing exclusively at pointers. Lussyren's fingers are not pointing at an object, but learning directly through sensual contact with the object itself. Lusseryn's text though is pointing to a way of knowing in danger of being lost when projected against a bright flat surface. Of course, PowerPoint is hardly alone in this tendency to attenuate tactile relationships with the real; it is merely nudging it a little further along.

Borgmann (1999) claims all information technologies endanger our contact with substance:

> While information technology is alleviating overt misery, it is aggravating a hidden sort of suffering that follows the slow obliteration of human substance. It

> is the misery of persons who lose their well-being not to violence or oblivion, but to the dilation and attenuation they suffer when the moral gravity and material density of things is overlaid by the lightness of information. (p. 232)

Reality is not able to compete with the "supernatural brilliance, limitless variety, and unreal availability [that] constitute the normative identity and charm of virtual reality" (p. 185). More specifically, information technology engenders a totalizing style of practices that threaten to

> restrict our openness to people and things by driving out all other styles of practice that enable us to be receptive to reality. This threat is not a problem for which we must find a solution but an ontological condition that requires a transformation of our understanding of being. For that, we need to understand technicity as our current mode of revealing things and people. (Dreyfus & Spinosa, 2003, p. 341)

The totalizing style of practices inherent in PowerPoint presentations are importantly mediated in part by the pedagogical thoughtfulness of the teacher composing the slide deck, and still later in his or her tactful presence in the classroom. McLuhan warns us, however, to be aware of the trends. Teacher presence importantly serves to counterbalance the PowerPoint presentation. But the more a teacher relinquishes his or her authority as the significant teaching presence (for example, by deferring to the pre-determined direction of the PowerPoint slideshow rather than diverge when it is pedagogically relevant to do so), the more PowerPoint serves to diminish both substance and human substance. According to Borgmann, this is equivalent to obsolescing meaningful activity, and more specifically here, the focal practice of teaching.

The writing on the wall

PowerPoint revives Plato's Cave. Rather than the primitive shadows cast by a fire, students are now witness to the projection of bright, highly articulated light upon the

wall. The teacher creates and then interprets the projection for the students. Whether the PowerPoint-enhanced teacher is to be understood as one of the prisoners still in the dark or the one returned after seeing the light is uncertain. Perhaps more important is the retrieval of this parable and its invitation to contemplate illusion, artifice and the ephemeral nature of knowledge. It is a strong reminder that intellectual health depends in no small part on the ability to step away from the projected images and regard the world from new perspectives.

PowerPoint also reclaims the marginalized art of rhetoric or persuasive speech in the academy; more specifically PowerPoint retrieves the sales pitch (Tufte, 2003b). To pitch something is to throw it. PowerPoint allows the presenter to pitch directly, to aim straight at the mark with a negligible drop in the projectile course. This, interestingly enough, is the definition of the phrase "point blank." To be in point blank range is to be so close that when one fires, the object is thrown along a flat trajectory. The aim is thus perfect, but blunt. The hardware of PowerPoint allows for just such a perfect trajectory, duplicating the image on the personal computer screen to a large projection surface. The software of PowerPoint is of course primarily concerned with direct pointing, that is precise and perfect aim.

The danger implicit in the sales pitch is a willingness to sidestep logical coherence. Pitching a sale is often an appeal to emotional needs—real or manufactured. To this end, the sales pitch deliberately obscures at times thoughtful consideration and cogent argument. It is thus a special form of rhetoric, a consumerist brand, persuading not by logic per se, but by eloquent, charismatic language, and at moments oversimplifying

the truth. PowerPoint bullets serve the sales pitch especially well here by making it easy to describe things in a "true" but conveniently abbreviated fashion. The detailed fine print, written in more difficult, time-consuming narrative format, is located elsewhere. Through PowerPoint, it appears the whole truth is presented—vivid, large and ultra-real. But the truer, more detailed picture may in fact be obscured from view. Then again, there are instances when it is pedagogically helpful to hide the details, for example, in order to grasp the larger structure in which certain ideas are situated. At other times a teacher may want to deliberately paint a partial or exaggerated picture in order to entice students into a subject, to arouse interest. Thus, the sales pitch—eloquent, charismatic language, and appeal to emotions—may also be the stuff that good teaching is made of, if done pedagogically. PowerPoint may certainly assist in this project, affording a teacher easy access to a wealth of appealing and provocative images and techniques aimed at evoking interest. Still, it is hard to imagine Richard Feynman's undergraduate physics lectures being helped by PowerPoint, or Abraham Lincoln in delivering his Gettysburg address (Norvig, 1999).

Significant insignificance

PowerPointing ubiquitously, the presenter may end up pointing at everything, and thus nothing at all. When everything is signified or significant, nothing has significance anymore. The *Columbia* Shuttle disaster demonstrates the tragic consequences possible here. Critical information presented in a series of PowerPoint slides by NASA engineers to executive decision makers was lost in a sea of significance and thus insignificance. Information was broken into points within points of significance through nested bullets.

However, the relative significance of the most critical point, buried several levels deep, was apparently not discerned from all the rest, and the true import and meaning of this information passed unseen.

> As information gets passed up an organization hierarchy, from people who do analysis to mid-level managers to high-level leadership, key explanations and supporting information is filtered out. In this context, it is easy to understand how a senior manager might read this PowerPoint slide and not realize that it addresses a life-threatening situation. (*Columbia* Accident Investigation Board, 2003, p. 191)

The *Columbia* Accident Investigation Board therefore blames NASA's overuse of PowerPoint as one of the key factors leading to the shuttle disaster. "The Board views the endemic use of PowerPoint briefing slides instead of technical papers as an illustration of the problematic methods of technical communication at NASA" (p. 191).

The NASA incident is sober warning for educators to pause and reflect on the possible consequences of delivering a steady diet of PowerPoint presentations to students. Knowledge presented continuously in bulleted format tends eventually to homogenize and level information, rather than underline the importance of any given point. Over-signifying is not unlike underlining everything in a book or speaking in a monotone. Crucial too is the recognition that regular, accepted use of any presentation medium fortifies a certain mode of communication and advantages particular ways of knowing. Used endemically, this same medium simultaneously attenuates and obsolesces other modes of communication and forms of knowledge. In some cases, the loss of other methods can lead to unexpectedly deleterious results.

Finally, while individual teachers may claim only pedagogically good use of PowerPoint, it is important not to overlook the overwhelming influence of this software

presentation tool on today's educational culture, particularly in redefining what a lecture looks like, consists of, and how it is experienced. When a particular communication medium becomes accepted as the norm, as was the case at NASA (and like so many educational conferences and undergraduate classrooms), it then becomes necessary to have good reason *not* to use the technology rather than to use it. Indeed, that reason sometimes turns out to be quite practical: no other presentation tools are available.

Conclusion

> The peril of technology lies not in this or that of its manifestations but in the pervasiveness and consistency of its pattern.
> (Borgmann, 1984, p. 208)

As we turn to accomplish our multifarious human projects, we seize hold of whatever tools we have at-hand to assist us in our task, to extend our reach, to enhance our powers. PowerPoint has proved itself an excellent instrument of the lecture presentation, allowing teachers to gather and organize an astonishing array of digitized materials for that purpose into a single file. At the same time, PowerPoint comes with an appealing, and in many respects, irresistible invitation to its users. This invitation exerts invisible lines of force upon the choices teachers make everyday in forming and subsequently presenting their knowledge with this medium. These invitational lines are fortified through early habituation to a relatively small set of default options. The otherwise innocuous default patterns selected by Microsoft software designers to ease new user adoption are unexpectedly but powerfully influencing how knowledge is being formed and presented across all disciplines.

The disappearance of the diverse flora and fauna of knowledge forms native to

specific disciplines is of particular concern here. PowerPoint may indeed be a *killer app*, superseding a variety of classroom practices and potentially obsolescing valuable, perhaps critical knowledge forms. The habituating trends of PowerPoint may be redressed in part by consciously thinking "beyond bullets," by taking creative advantage of the open palette PowerPoint affords. In this regard, it may be argued that new knowledge forms and teaching methods heretofore unavailable are now possible through PowerPoint. But teachers must also continue to make room in classrooms for ways of knowing that are not well located in a PowerPoint slide-deck. And when issues of pedagogical import present themselves within the natural dialogue of the class—but exist outside the realm of discourse appearing on the current slide—there needs to be a willingness to diverge, to use the projector's on/off switch or the B hot key turning the screen black for a time.

Other pedagogically relevant questions about PowerPoint remain unaddressed here. For instance, what habits of mind are being encouraged in students through the ubiquitous use of PowerPoint in their learning and class assignments? By reforming and presenting knowledge primarily as bulleted items couched on Microsoft templates, are teachers inadvertently short-circuiting the tacit, mimetic, and dialogic dimensions of the teaching-learning relationship? Dewey's (1980) admonishment is most relevant here: "the 'good' man [sic] who rests on his oars, who permits himself to be propelled simply by the momentum of his attained right habits, loses alertness; he ceases to be on the lookout. With that loss, his goodness drops away from him" (p. 132). By not remaining alert to the constraining patterns of presentation embedded in PowerPoint—the very

patterns that make it so easy to use—might teachers be unintentionally obsolescing important knowledge and potentially affective interests in knowledge, limiting students' access to deeper, more complex modes of knowing, understanding, and valuing a discipline?

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CHAPTER 5:

PAPER IV – ON THE "INFORMED USE" OF POWERPOINT: REJOINING VALLANCE AND TOWNDROW[8] .

It is gratifying that Michael Vallance and Phillip Towndrow (2007) have formulated a considered response to the theme of the mediating influence of communication and information technologies such as PowerPoint.[9] They propose "informed use" as antidote to the admittedly less than pedagogically appropriate patterning inherent in some PowerPoint presentations ("Adams is rightly concerned about the undue influence the program has on undiscerning users"). More generally, they suggest teachers armed with the question, "Why am I (or my students) using technology at this stage in the lesson?" are positioned to unlock the multiple benefits information and communication technology (ICT) afford in educational settings. Vallance and Towndrow argue that "informed use" of ICT is a "simple" matter of guiding teachers "in adding value to their teaching and their students' learning through the adoption and use of ICT". They offer an optimistic exemplar of a PowerPoint slide as evidence that "without much additional knowledge or effort" ICT may be mobilized effectively in the classroom, while safely avoiding more detrimental or unsound usages.

Vallance and Towndrow's aspiration to inform teachers of the untapped potentials

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[8] A version of this chapter has been published: Adams (2007). *Journal of Curriculum Studies, 39*(2), 229-233.

[9] Vallance and Towndrow (2007) also kindly drew to my attention to a missing reference in "PowerPoint, habits of mind, and classroom culture" (Adams, 2006). In particular, the "recent poll of 4500 undergraduates" (Adams 2006, p. 390) should be attributed directly to Kvavik *et al.* (2004), not Young (2004). Young's (2004) paper is a report on the findings of this extensive EDUCAUSE Center for Applied Research (ECAR) study, with specific reference to students' impressions of PowerPoint usage in college classrooms.

of ICT is surely to be commended, along with similar pre-service and professional development efforts. However, for the most part, they seem little concerned with the deeper hermeneutical, pedagogical, and existential implications of technology integration in the classroom. As teachers become more *informed* about the affordances of ICT and subsequently take up and use these tools in their classrooms, their teaching practices, relations with students, and ways of interpreting the world are simultaneously *informed*—conformed, reformed and deformed—*by* the given technology-in-use. It is this latter sense of "informed use" I highlight in "PowerPoint, habits of mind, and classroom culture" (Adams, 2006). My research suggests that PowerPoint—and by extension, other media and information and communication technologies—co-shape educational realities in unexpected ways, introducing a host of pedagogical and normative challenges and side effects not well understood, and therefore not well addressed in current educational research literature nor accounted for in teacher education programmes.

Teacher education and professional development programmes tend to treat ICT merely as tools that, when deployed effectively and with sufficient saturation, promise to enhance pedagogy, student ICT literacy, and academic success. At the same time, digital technologies are viewed as powerful, yet essentially benign, means to achieve educational ends. This common sense, instrumental understanding of ICT recommends a practical, how-to approach to technology integration. However, such an instrumental or calculative focus typically elides the lived experiential dimensions of human–technology relations, and thus overlooks the manifold translations being enacted in everyday educational practices along with the significant transformations in how

teachers and students perceive and understand their world. McLuhan's (1964) tetrad is an attempt to discern some of these material effects, patterns, and trends.

With their example of a single PowerPoint slide designed for use on students' laptops in a Communicating Science classroom, Vallance and Towndrow (2007) aim to demonstrate that information and communication technologies need not *decide* pedagogical intentions or actions. They suggest that "informed" teachers are always in a position to repurpose or even subvert a digital technology's "implicit users manual" (Verbeek, 2005) to suit their local pedagogical intentions. On this point I agree: sharing exemplary technology practices and encouraging "subversive" (Squires 1999) uses of software tools should form an integral part of every professional development programme involving technologies. However, "the peril of technology lies not in this or that of its manifestations but in *the pervasiveness and consistency of its pattern*" (Borgmann 1984: 208; emphasis in the original). Thus we must turn to understand the phenomenon of PowerPoint in its most pervasive, "stabilized" (Muller 2001) use in classrooms. My concern is that educational technologists as well as the educational profession at large severely underestimate the sophistication required to appreciate the reach of educational technologies in the corporeal, relational, temporal, and spatial niches of our pre-reflective experiences and primal practices.

While ICT need not determine intentions or activities, each digital technology has already shaped our perception and being in the world, before we are conscious of the way that our intentions and activities are lived. Realistically we can only bring to explicit awareness those aspects of our mediated lives that for one reason or another have

presented themselves as concerns. The implications of the pervasiveness of the human–technology relation are challenging to grasp. However, as I showed previously (Adams, 2006), some purchase can be gained by attending to what a given technology *says* to us, rather than what it *does* (Illich 1996). When we, as teachers, take up, and engage the (inviting) script of PowerPoint or other ICT, we are simultaneously enrolled in and subsequently habituated to their programmes of action, methods of teaching, and ways of perceiving and learning.

Artefacts have always influenced how teaching and learning happens. Installing a blackboard at the front of the classroom invites a different set of teaching practices and pedagogical relations than one without. For example, as students can now be summoned to the front to display their work, the blackboard serves to convene a more public relationality in the class. The architectures of modern educational institutions implicitly carry the assumptions that informed their design. Beliefs and decisions about what schools are for, what kinds of knowledge are prized and worthwhile, and how teaching and learning happens, all inform and are formed by the exterior and interior shape and layout of every school and classroom:

> The hierarchical relationship between teacher and taught is inscribed in the very layout of the lecture theatre where the seating arrangements—benches rising in tiers before a raised lectern—dictate the flow of information and serve to "naturalize" professorial authority. Thus, a whole range of decisions about what is and what is not possible within education have been made, however unconsciously, before the content of individual courses is even decided. These decisions help to set the limits not only on what is taught but on *how* it is taught. Here the buildings literally *reproduce* in concrete terms prevailing (ideological) notions about what education *is* and it is through this process that the educational structure, which can, of course, be altered, is placed beyond question and appears to us as a "given" (i.e. as immutable). In this case, the frames of our thinking have been translated into actual bricks and mortar. (Hebdige 1979: 12, 13)

The crayon-stained wooden tables and chairs of the art-room orient students differently to their world than the shiny laminated benches and steel-legged stools of the science lab. The cavernous gymnasium invites different kinds of play than the playground outside.

Just as the architectures of buildings and classrooms predispose certain pedagogies of teaching and learning, so the architectures of information and communication technologies shape and license certain ways of knowing and doing over others. Software encodes values—decisions about what is important, useful and relevant, and what is not, restricting certain activities by making others possible or impossible (Lessig 1999). When software is used in educational contexts, these values are imported and integrated, translating and sometimes displacing related practices. Jensen and de Castell (2004), for example, argue that the plagiarism-detection software, "Turnitin"[10], is recasting scholarly values such as originality and authorship in terms of knowledge capital and ownership, and redefining academic integrity as policing and citation practices.

In seizing hold of PowerPoint, a teacher is not only aided, enmeshed, and constrained by the designs of its software script, the teacher is also surrendered to the language, imagery, framing, at-handedness, sensuality, and mediation of its symbolism and materiality. At issue is the powerful sway PowerPoint exerts in prescribing a new presentation genre (Meyers 1999, Yates and Orlikowski, forthcoming) and set of discursive practices in the classroom, and its formative, mediating influence on how knowledge is being represented, presented, and subsequently held by students. We are

[10] See http://www.turnitin.com, accessed December 12, 2006.

missing, in fact, what Turkle (2004) calls "the phenomenology of the digital experience" (p. 102) for students and teachers alike. Describing and reflecting on the lived experiences of teachers and students engaged in technology-enriched environments is needed to develop more informed epistemologies of practice for both experienced and novice teachers, and to suggest software design principles more sensitive to pedagogical practice.

Informed use may be, for Vallance and Towndrow, "the key that releases the genius hidden within ICT." The genie of ICT may indeed be hidden, but it is already released, quietly and persistently informing our every digitally-enhanced action and experience. More patient, critical research is called for in order to better understand the mediating influences of new media and information and communication technologies in the classroom. Meanwhile, educators are well served by living more reflectively with digital technologies, attentive not only to what they do, but what they may undo; to what they say and what they cannot say.

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CHAPTER 6:

PAPER V – TEACHERS BUILDING DWELLING THINKING WITH POWERPOINT[11]

> [The machine] hacks the stone starker for more determined building
> So we won't be drawn by the lovelier lingering of the master-hand.
> (Rilke, 1975, p. 157)

At a faculty development workshop on applying brain research to enhance instruction, a brief technical glitch prompts the presenter to humorously remark, "If PowerPoint crashes, my IQ will drop 20 points!" Andy Clark (2003) opens his *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* recounting the recent loss of his laptop, an experience he likens to "a sudden and vicious type of (hopefully transient) brain damage…the cyborg equivalent of a mild stroke" (p. 4, 10). Such anecdotes, jokingly hyperbolic in their account, nonetheless allude to the tight intimacies, the primordial interminglings, and, at times, the acute dependencies we find ourselves living with technology today. Our being-in-the-world is evermore outlined by, folded into, and transpermeated by the objects of our post-human world. We are, it seems, "natural-born cyborgs, forever ready to merge our mental activities with the operations of pen, paper, and electronics" (Clark, 2003, p. 7).

Using PowerPoint as a touchstone, this research investigates how teachers are not only aided, "enhanced," and sometimes constrained by the particular media and technologies in use, they are also enmeshed and relinquished to the language, imagery, framing, at-handedness, and sensuality of their materiality and design. As Maurice

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[11] A version of this chapter has been submitted for publication.

Merleau-Ponty (1962/2002) observes, "our existence changes with the appropriation of a fresh instrument" (p. 143). We might wonder then what transformations of perception occur, what translations of action manifest as we take up a "fresh instrument" like PowerPoint in the lived space of the classroom? To address the *qualis* or "what-ness" nature of such questions, a qualitative research approach is called for. In particular, hermeneutic phenomenological inquiry explicitly positions the researcher to comprehend information and communication technologies, not as solely objective or subjective phenomena, but as *lived*. A central feature of phenomenological method is the gathering of a field of descriptive evidence from which underlying patterns and structures of experience can be drawn (van Manen, 1997).

The phenomenological study detailed here involved in-depth interview of twelve instructors on two different post-secondary campuses; observation of large university lecture classes where PowerPoint was used as a primary means of teaching; and reflection on my own use of PowerPoint as a teacher. The phenomenological descriptions represented below have been culled from participants' recollections of actual experiences using PowerPoint. The paper is framed in light of Martin Heidegger's (1971) "Building Dwelling Thinking" and "The Thing". In these essays, Heidegger shows how a thing (or a place) opens a world to us, revealing novel structures of experience and meaning. Each technology discloses a new horizon of possibilities to us. We are "the be-thinged" (p. 181); we are prereflectively inhabited, conditioned, and creatively provoked by the things of our world.

Building-with PowerPoint

The architectural spaces we design, build, and inhabit influence in subtle and sometimes significant ways our activities thereafter. Sir Winston Churchill once famously observed: "we shape our buildings and afterwards, our buildings shape us." He made this statement in 1943 to the House of Commons in a bid to have the old chamber, bombed on 10 May 1941, "restored in all essentials to its old form, convenience and dignity" (The Churchill Centre, 2005). Churchill

> recognised that the intimacy of the old chamber had created an environment for lively and intense debate, whilst the rows of opposing benches had created the two-party system—in Churchill's eyes the bedrock of British parliamentary democracy. Thus the limited space and seating—so often berated by Members in the past—was now seen as a virtue, along with the confrontation-inducing layout. Indeed it had come to define the very nature of government and parliament. (Riding, 2005, ¶3-4)

Such subtle but decisive shaping of practice is not limited to our architectural structures. All built (designed) objects invite us wittingly and unwittingly to extend or change our relationship to our world. Mobile phones, for example, have served to alter dramatically the way some of us stay in touch with one another, challenging and reframing previously stable notions such as availability and autonomy, and public and private spaces (Arnold, 2003). Such enhancements or transformations may be minor to profound. Yet often the full spectrum of effects is unanticipated and unseen until the object is integrated transparently into our lives. And by then, life is different; we may wonder only how we lived without this or that gadget.

The PowerPoint invitation

According to Illich (1997), we are dwelling today in a *milieu technique*, the

irresistible sway of high technology environs. The technological milieu is shaping substantially—insinuating itself, habituating us and simultaneously reinterpreting—how we act in and perceive the world. To gain access to the unique tenor and structure of this new milieu, Illich suggests we look beyond what technological objects *do*, and attend to what they *say* to us. To "hear" what an object of technology might say to us, we must enter the realm of lived experience, and orient ourselves to prereflective or "pathic" (Straus, 1966) knowing. Within the situated, relational, embodied context of lived space, each object or place presents a unique appeal to us. Van Manen (1997) illustrates: "cool water invites us to drink, the sandy beach invites the child to play, an easy chair invites our tired body to sink in it" (p. 21). Of course, beaches and easy chairs do not "speak" to us in the same way as people do. Too, it is our cultural pre-understandings that provide the "conditions whereby we experience something—whereby what we encounter says something to us" (Gadamer, 1976, p. 9). Nonetheless, we can see how, having pre-reflectively responded to the invitational quality, we enter into a "rapport with things" (Heidegger, 1971); we become ontologically and hermeneutically engaged. What then is PowerPoint's *vocative* appeal to a teacher in the lived space of the classroom? What invitation does PowerPoint issue to a teacher as s/he is preparing for a class?

Constructing a lesson with PowerPoint

The call or appeal of PowerPoint is at once a linguistic gesture ("Microsoft PowerPoint," "Click to add title," "• Click to add text"), a promisingly familiar visual digital environment, a complex hermeneutic horizon of previous PowerPoint experiences, as well as entrance to an intentional, architected form, a windowed milieu that the teacher

may traverse with her eyes upon screen, fingertips on keyboard, hand on mouse. As Heidegger (1972) tells us, "When we handle a thing, for example, our hand must fit itself to the thing. Use implies a fitting response" p. 187). Reaching out with anticipation of PowerPoint's promise to help her point powerfully, the teacher orients herself toward her windowed screen; her being is drawn in and gently caught in the "draft" of PowerPoint, the unique horizon of possibilities it brightly offers. She responds fittingly.

One teacher describes how she constructs a lesson using PowerPoint:

> *I insert an image, add some text, then try them in different positions on the slide. I'm looking for balance. I like using compelling images, with minimal, carefully chosen text for impact. As I work, I do not, cannot separate the composition of slides themselves from the subject matter at hand, the vision of my students, and the appeal I am trying to make. I sit back and look (perhaps trying to see the slide as my students might), then adjust, and adjust things again. I try out different fonts, sample background colours from my images, wanting to give the whole presentation a sense of visual cohesion. I take a certain pleasure and satisfaction in this. I move to Slide Sorter View [where all the slide thumbprints are laid out across the window] to grasp the whole so far, to visualize the general flow of the presentation. From here, I move a few slides to a different place in the sequence to see how that flows, then return to Normal view. I find I am variously engaged with trying to represent the content, the purpose of this teaching presentation, visually, in text, or both, and thinking about, imagining presenting the slides to my class.*[12]

Within the PowerPoint environment or milieu, the teacher's work materializes as an accumulating series of slides. The basic elements of each slide are text, images, color, and animation. She composes, adjusts, tries out new fonts, samples colours, switches "views," plays with order. She is engaged representing content as slides, then imagining the presentation in the immediacy of a classroom with her students. Slides, subject

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[12] The italicized text represents phenomenological research material drawn from individual interviews conducted in 2007 with twelve university and college instructors about their lived experiences of PowerPoint.

matter, the vision of her students, and her presentational and teacherly intentions intermingle.

In performing this preparatory work, the teacher is sitting in her office with computer, screen, keyboard and mouse; texts and papers litter the desk. Her screen shows numerous windows open: a web browser, email, a Word document, as well as PowerPoint. Occasionally her eyes wander from the screen, and stare thoughtfully out her office window into the distance. She turns back to the PowerPoint window, pulls her keyboard a little closer, nudges her mouse and continues work. Once the teacher is engaged in her preparation work, her office, desk, screen, keyboard and mouse recede into the background. PowerPoint too withdraws from full view, fading to a transparent framework, a sophisticated but peripherally present set of tools that she may variously call upon to perform her presentation design activities in this digital world.

The work-object or focal project of our instructor is not PowerPoint. Her project is the classroom situation she will find herself in a few days hence. As teacher, her primary intention is to creatively assist her students in learning the particular subject matter at-hand. For this purpose, for this subject matter, she has chosen to use PowerPoint. Thus while the presentation software frames and facilitates her activity of planning a lesson, PowerPoint is not the main objective and intention, anymore than canvas and paint palette are the objective and intention of the artist. Nonetheless, we must also notice how the instructor's activity patterns and meaning structures are also being quietly *in-formed*—conformed, deformed, and reformed—by the architecture of the particular software she finds herself *inhabiting*.

Inhabiting PowerPoint

In PowerPoint, the teacher sees and understands her teaching world in light of the particular horizon of possibilities this software unfolds to her as she works: slides, menus, animations, Slide Sorter View, Normal View. Her lesson planning world unfolds in the context of a bright, spacious rectangular "window," a white surface framed by and containing explicit text and iconic invitations—"Format, Font, Template, Click to add title, • click to add text, click to add notes." It is a world of surface and interface that she touches and negotiates some small distance away with the tips of her finger across the keyboard, and intermittent small shufflings of her hand wrapped gently about the mouse, or the quick taps and deliberate swishes of her pointer finger against the mousepad, her thumb as a helpful second.

Ihde (1990) suggests, "technologies, by providing a framework for action,…form intentionalities and inclinations within which use-patterns take dominant shape" (p. 141). *In* PowerPoint, the teacher "does not, cannot separate" the software's possibilities and designs from her own: the aims and inscriptions of the Microsoft programming team and the teacher intentionalities and inclinations intertwine, enmesh and reorient. The teacher's world is translated into new vocabularies and presentation genres, expanding her possibilities of action while simultaneously framing and constraining the world as a screenic succession of 4:3 slides.

Having answered the call of PowerPoint—its invitational qualities or affordances—the teacher enters a mode of human-technology engagement Chesher (in Suchman, 2007) describes as "managed indeterminacy" or *invocation*. "Invocation

involves those actions that define the terms of engagement written into the design script or discovered by the participating user" (Suchman, 2007, p. 282). The teacher is now conversationally engaged, enfolded and intertwined with PowerPoint. The teacher-technology relational boundaries blur and a hermeneutically rich but "silent"[13] corporeal rapport sets in.

Thinking-with PowerPoint

Aesthetic/anesthetic experiences of PowerPoint

Another instructor recalls how he went about composing a particular PowerPoint presentation for a college class:

> *I didn't start from scratch. I used a copy of another PowerPoint of mine from the same class and gutted it. I scanned through the chapter [of the textbook] and pulled out the main headings: the important ones, but also sections I know my students might have trouble with. I inserted those as slide headings. Then I pull out a few key points for each heading. I limit myself to five, maybe six bullets a slide. So here I end up with several slides with the same heading. I go back and forth though. Sometimes, I fill in a slide title then add the points right away. I've used this particular slide deck for a few years. It has more images now than when I first used it. Plus I've taken out some of the bullets and organized the points somewhat differently on a few slides. For example, here, the points make more sense in a circle. I realized this when I was explaining it in class, but also, there's the monotony of it. I was putting myself to sleep with endless lists of bullet points.*

This teacher is engaged in efficiently and methodically representing the main content of his course as slide headings, each followed by a series of bulleted points. He points out that, over time, he has made some adjustments in representational form beyond his usual choice of bullet points. This reworking was spurred by his noticing, in the midst of presenting his slides, that some bullet points might be better expressed as a circle rather

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[13] Sartre describes our everyday experience of our bodies as "*passé sous silence*"—passed over in silence (Sartre in Bleeker & Mulderij, 2002). In a similar way, our experience of the tools we are using (proficiently) sinks into a transparent, "silent" sphere. Indeed, "in order to be what they are, tools must recede from visibility" (Harman, 2007a, p. 62).

than a list, serving to more accurately illustrate relationship between points. Too, the same bulleted format slide after slide was striking him as monotonous and soporific.

But perhaps most striking about the teacher's account is how the entire preparation of the lesson proceeds in terms of "points" that are presumably key concepts of the lesson. It is as if the teacher is engaged in composing headlines for a story, while the story itself (the knowledge, values, and skills that inhere in the subject to be taught) remains invisible. The preparatory milieu of PowerPoint technologizes the manner that subject matter knowledge is shaped and embodied by the teacher. Instead of writing, for example, the script of an illustrative story to tell, the teacher is shuffling headlines, and subheadings for the lesson. Like the technique of acronym which translates to shorter-breathe shorthand for long-winded phrases and titles, the PowerPoint slide encourages the collapse of narrative and argument to points and subpoints. How will this focusing on "points" influence the presentational quality of the lesson and the knowledge re-presented in this presentational media-mode of teaching?

Another teacher describes a somewhat different approach and focus when composing her PowerPoint slides:

> *Composing this slide, there was a particular aesthetic I was striving for: thoughtful use of color, thematic cohesiveness, consistency between the slides (not sameness!), but also movement, meaningful movement through and among the slides. There is clearly an art to this.*

This teacher is more concerned with visual appeal, and thematic integrity with the subject matter. She is sensitive to movement "through and among" her slides. Movement has significance. It seems that the teacher is trying to be sensitive to the atmospheric quality of the PowerPoint media on her students. Again, this raises the question of how

atmosphere is usually anticipated in the planning of a lesson and how the aesthetic of PowerPoint slides may be seen as an evocative tool for establishing a sphere.

Dwelling-with PowerPoint

Enter teacher with trolley replete with laptop, mouse and data projector. Untangling the garage-band knot of electrical cords and connector cables, the teacher connects, plugs in, and turns on laptop and projector. This process is sometimes accompanied by palpable anxiety surrounding the stages of equipment hook-up, and worries about self-competence in the face of difficulties or breakdown and the implications of "no PowerPoint" to the fate of the class. The projector hums at last, the slides are cued up.

Configuring a televisual (screenic) space

The simple act of drawing the blinds or switching off the light, darkens perceptibly the hue of the wall, softens the faces of students. The teacher becomes less visible; the projected slide shines brighter. The mood changes, the classroom atmosphere shifts. PowerPoint reconfigures the classroom as a cinematic space: the students settle in as spectators; while the teacher orates, narrates the slides from the side. As the teacher turns to the opening slide, the students are cued to sit back, get comfortable and (hopefully) "enjoy" the PowerPoint presentation with a certain sense of passivity. A subtle change occurs in the students' attitude and orientation: students listen to a talk or lecture, look at overheads, but seem to watch a set of PowerPoint slides. The large, bright slideshow reminds students they may become a particular kind of audience, "invigorated or drowsy, [but] a generally passive audience that is rarely called upon to really

interrogate the images" (Crang, 2003, p. 242). As students are drawn into the PowerPoint show as spectators, what of the teacher?

The vocal rhythm of PowerPoint

> *I notice when I turn to begin my PowerPoint, I shift my role slightly—I'm less conversational, more oratorical. PowerPoint locks you into a gait in your speech, a kind of vocal rhythm.*

The teacher with-PowerPoint finds himself standing somewhat differently in relationship to his class: less dialogic, more monologic; less open to interruption and discussion, fastening to a vocal pattern that rhythmically signals oration not conversation. Vocal rhythm may also synchronize with slide rhythm.

> *The arrival of a new slide is the occasion to take a breath, a momentary pause to look at the slide, allow its meaning to prompt me: a reminder of what to say next, what direction to pursue. But too, I must somehow find connection with what I have just said. Or not. It tells me what comes next. I feel I must press on.*

Like walking and talking with a good friend, footfalls—breath and slidefalls—find a mutually comfortable rhythm and pace. Here a special kind of pathic relation is hosted, not between teacher and students, but between teacher and projected slides. This human-technology dialogue is apparently less mechanically complex and nuanced than the one taken up during the planning and design phase. The slide "speaks," the teacher responds, and the next slide "speaks" again regardless of what the teacher says. Of course, this is most simply because the PowerPoint machinery does not respond to human voice, only to the deliberate tap of fingers on the keyboard, or the hand manipulating the mouse. More specifically, the slides are no longer in the midst of being created and manipulated. This predicament of being instructionally captivated in a slide set seems to be the consequence of the teacher planning the lesson with a series of headlines or points, as we saw above.

The teacher has switched to "View Show" mode. In this mode, the teacher cannot change the slides themselves, he can only control the direction of movement between the slides and animation moments—forward, backward—as well as access preset links and buttons.

"I am committed to do this PowerPoint"

> *As soon as I clicked to the next slide, I knew immediately it was the wrong thing. Seeing their eyes, I felt: I simply can't go on. It was the same sinking feeling you get realizing the person you are having a conversation with isn't listening to you. I had spent all this time preparing this PowerPoint presentation and then the problem with PowerPoint is you just can't simply jump ahead, be extemporaneous—"just ignore this and this while I find the right slide." I was stuck with my plan.*

This college instructor recalls a time when he suddenly felt that, in the lived context of his class, his choice of using PowerPoint to address a particular topic was misjudged. Of course, any lesson plan or teaching approach can go awry or fall flat. In such moments, the teacher may decide to "stick with the plan" or diverge and improvise. The seasoned teacher usually has a few other "tricks" at-hand. Yet, is there something about PowerPoint that complicates the move to diverge in response to one's felt sensibilities? One teacher describes her PowerPoint dilemma like this:

> *PowerPoint is a finished product. It is hard for me to loose myself from the slides in the context of my class. The story has, so to speak, already been decided.*

But perhaps, the problem is precisely that the story had not been decided. The teacher did not prepare a story but a series of points, stops on the way to some cognitive end point. She goes on to describe the resistance she feels in deviating from the slide set she herself has constructed: "If I answer a question, how will I go back to the slides?" In planning and carefully constructing the lecture beforehand, she tried to imagine her students there before her, tried to anticipate their questions. But now, in the context of her actual class,

the world looks different.

> *In the classroom, PowerPoint is a representation of my anticipated presentation—an imagining of what my presentation would be, could be. But in the actual moment of teaching, things are often otherwise. In the midst of teaching, my slides and I sometimes come into conflict with one another. Then I feel fragmented, forced to choose this particular outcome—what is represented up there on the slides—over the felt relation with my students—what seems to present itself to me in the moment. I am committed to do this PowerPoint. I cannot now easily choose to do something else.*

When a teacher uses PowerPoint in her classroom, she commits to the unfolding of a particular form of teaching and learning, a predetermined story wending its reckoned path to a decided conclusion. A PowerPoint presentation prepared beforehand is also an investment, visible proof of preparation and organization in the face of the contingent, indeterminate lifeworld of the classroom. To abandon such obvious evidence of competence may strike as fool-hearty, exposing oneself to an uncertain, unprepared-for future. As Howell (2007) laments

> From the moment I walk into the lecture theatre I feel the pressure from my students to line up my thinking with their PowerPoint notes, without which they seem to be lost. I usually succumb by connecting them to the screen rather than to myself, each other, and the subject matter. In giving precedence to the object of PowerPoint, where the slides take on a language and world of their own,…students may subconsciously be encouraged to zoom out of the teacher's presence in favor of the rectangle on the screen. (p. 139)

The Times-Square-like surround of slick and easy possibilities is so appealing and omnipresent, our inner compass as teachers may be quietly lifted from us and replaced by the veneer of "powerful" solutions. As sociologist Daniel Bell prophetically wrote in the early 1970s, the new "intellectual technologies"—tools that specifically extend our cognitive reach—substitute "algorithms (problem-solving rules) for intuitive judgments" (1973, p. 29). A digital technology is given proxy for professional knowing.

The demand to "have" the PowerPoint

> *On the first day of class, a student asks, "Will you be making your PowerPoint slides available?" I reply, "I haven't yet read all of Plato's dialogues, nor have I learned yet how to put slides up on the web. Given a choice between taking the time to read another dialogue and putting my PowerPoint files on the web, I think I'd choose the former." At the back of the lecture hall, a young woman snaps her book shut, gathers her things and promptly leaves my classroom.*

The PowerPoint slide deck is a lecture product that students are increasingly expecting to procure from their teacher. In becoming a product, the teacher's work may seem less a matter of developing pedagogic relations and the sharing of understanding, skill and expertise, and more a matter of commodity and consumption. Here the young woman expresses her disgruntlement that the new covenant of entitled student-consumer has been broken. She has nothing to gain from the philosopher in his person, only his PowerPoint.

> *At a conference recently, where PowerPoint is the norm, I am speaking before a fairly large group. As I begin, I am surprised to notice someone, several rows back, raise their hand as if for a question. But then I see the hand is holding a camera, and it quickly goes back down again. Next slide. The same digital-camera-hand goes up then down, and now, off to my right, some ways back, I see another camera-touting hand shoot up. I feel taken aback. Surely my PowerPoint slides are not so compelling that each slide should warrant photographing. No: I, or rather, my work, is being consumed, commoditized and owned...and all without my consent.*

Borgmann (1984) claims modern technology is decisively separating means from ends. The activities or processes of creating things are progressively being hidden from view and replaced with the more singular activity of procuring end-products or commodities. "What distinguishes a [modern] device is its sharp internal division into a machinery and a commodity procured by that machinery" (p. 33). As a result, some of the practices

associated traditionally with creative teaching activities are ostensibly disappearing in the wake of sophisticated technologies.

As illustrated above, the PowerPoint slide deck is essentially a product of a teacher's knowing and thinking in conversation with the PowerPoint software, now solidified in single framed, sequential snapshots. Thus with PowerPoint, students witness more often the projected knowledge product, and less the teacher's knowing-in-action. Then again, each slide has the potential to trigger the embodied insights of an experienced practitioner in the immediacy of the now. This *punctum* or evocative capacity can "save" a PowerPoint presentation from being merely a product.

Yet it may be that "the ultimate success of teaching actually may rely importantly on the "knowledge" forms that inhere in practical actions, in an embodied thoughtfulness, and in the personal space, mood and relational atmosphere in which teachers find themselves with their students" (van Manen, 1995, p. 48). Thus, a primary concern here is a bypassing of the experiential dimensions of practical knowledge, both in the discipline of the subject as well as in teaching practice. When educators try to capture and translate aspects of their tacit understandings to a series of slides, there is the danger of "short-circuiting" the normally contingent enactments of their ordinary teaching and professional actions. Of course, "shortening the circuit" is precisely what devices of expedience, like PowerPoint, are designed to do: eliminate "unnecessary" sub-steps (via hardware or software solutions) to allow the most efficient path to an end.

Ready, set, 143 slides!

> *Not so long ago, I gave a lecture for a PowerPoint-loving colleague of mine who had to be away. Standing before his students, I opened his PowerPoint file on my*

> *laptop, the whole system struggling to cope with the gigantic file. While we are waiting, I tell his students that their professor has left me 143 slides to cover today. "That means," I calculate, "one slide every 21 seconds. So we better hurry up and get started!"*

PowerPoint exhibits the possibility of, or certainly the desire for, maximum efficiency in teaching. Contemporary technologies are the product of, as well as the increasingly complex scaffold supporting and reifying a particular technological frame of mind, "a mode of revealing," which Heidegger calls "enframing" (*das Gestell*). In today's ubiquitous surround of technologies

> we increasingly think and act in accordance with the world picture [modern technology] provides…The technological mode of revealing is a fixation of things by categorizing them and representing them to ourselves in thought through abstract categories, thus making manageable and capable of being efficiently manipulated—a demand to which the fluid and the ill-defined remains inconveniently resistant….We "enframe" things by turning them into instances—understanding them in terms of the objective properties attributed to members of the category to which they have been allocated. (Bonnett, 2002, p. 234).

This technological way of seeing things—wherein all things, including human beings, increasingly show up to us as resources to be enhanced and optimized for maximal efficiency—is radically restructuring our daily lives, along with contemporary learning experiences and teaching practices. To put it another way and perhaps a little more forcefully, post-modern technology engenders a totalizing style of practices that, according to Dreyfus and Spinosa (2003) threaten to: "restrict our openness to people and things by driving out all other styles of practice that enable us to be receptive to reality. This threat is not a problem for which we must find a solution but an ontological condition that requires a transformation of our understanding of being. For that, we need to understand technicity as our current mode of revealing things and people" (p. 341).

Conclusion

Composing a lesson in PowerPoint, that is, scribing in and subscribing to the presentation genre of corporate training, we convey to our students at school, and to our colleagues at meetings and conferences, a de-narrativized, technologized version and often visually monotonous picture of the world. PowerPoint sponsors a style of thinking and presenting, a normative framework for staging knowledge: headings and bullet points for teachers to "talk to". This scaffolding of abbreviation, built into the software as default signage, implicitly informs how some teachers visualize and subsequently present their knowledge in the lived space of the classroom. The projected PowerPoint slide presentation, regardless of the kind of knowledge it is serving to frame, exercises a powerful sway over the teacher in the moments of teaching, at times appearing as impenetrable obstacle, rather than a generative support to the teacher desiring to pursue her pedagogical sense of tact.

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CHAPTER 7:

PAPER VI – THE POETICS OF POWERPOINT[14]

In dimmed lecture halls, the digital wall art of PowerPoint is brilliantly aglow. This presentation software, originally developed to ease the production of professional quality overhead transparencies, now regularly touches the lives of managers and mourners, children and churchgoers, statesmen and students alike. One 4:3 frame, it seems, fits all occasions. PowerPoint has inspired a host of zealous advocates and equally fervent critics; it has been hailed as a new art form (Byrne, 2003), and implicated in a NASA shuttle crash (Columbia Accident Investigation Board, 2003). Not without some exasperation, others quietly protest: "It is only a tool!" Or is it?

PowerPoint arrives in the midst a complex human learning environment—the classroom—an already constituted place sponsored by a seemingly irresolvable tangle of historical and present day presumptions regarding the manner and purposes of education. In our prevailing climate of standardized testing and its concurrent interest in efficient, effective teaching practices for measurable learning outcomes, PowerPoint is, for the most part, embraced as a welcome medium in the educational solution. Subtler pedagogical notions such as classroom aesthetics are passed over in silence, even though, as I intend to show, PowerPoint is appreciably altering the affective dimensions of the educational experience.

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Background

So far, much of the educational literature on PowerPoint has focused on how-to advice and providing practical exemplars (e.g. Buchholz & Ullman, 2004). Some survey data suggest students have an overall positive attitude towards PowerPoint (Atkins-Sayre, Hopkins, Mohundro, & Sayre, 1998; Apperson, Laws and Scepansky, 2006; Daniels, 1999; Frey & Birnbaum, 2002; Harknett & Cobane, 1997; Kask, 2000; Lowry, 1999; Mantei, 2000; Nowaczyk, Santos, & Patton, 1998; Szabo & Hastings, 2000). Students report PowerPoint is a useful cognitive tool, especially when the electronic files or slide printouts are made available for review. They describe teachers using presentation software as generally more organized. On the other hand, a recent poll of 4,500 American undergraduates reveals significant student unhappiness with the way technology is being employed in lecture halls, most particularly PowerPoint (Kvavik, Caruso & Morgan, 2004; Young, 2004).

Studies aimed at determining the efficacy of PowerPoint relative to other teaching methods have yielded mixed results. Lowry (1999), Mantei (2000), and Szabo & Hastings (2000) report PowerPoint-enhanced lectures increased levels of academic performance among college students, whereas Daniels (1999), Rankin & Hoaas (2001) report no effect. Kask (2000) found female, but not male, college students achieved better grades in a microeconomics course using PowerPoint. However, Susskind (2005) questions the results of some of these early studies, citing research design flaws. Apperson, Laws and Scepansky (2006), also in an attempt to overcome previous research design flaws, measured student satisfaction and test performance in ten classes across

four disciplines. One semester was taught with PowerPoint, one without, with each pair given by the same professor. This study concludes PowerPoint does not impact academic achievement, but does develop an overall positive impression of the professor including likeability, organization, and a host of other "good" teaching behaviors not directly attributable to PowerPoint. Levasseur and Sawyer (2006), offering the most comprehensive review of the educational literature on PowerPoint to-date, similarly conclude "the majority of studies comparing computer-generated slide-based instruction against other instructional methods have failed to find significant differences in learning outcomes" (p. 116).

Critical analyses of PowerPoint have also been forwarded. Most notably, visual communications expert Edward Tufte (2003) claims PowerPoint supports a cognitive style that is inconsistent with both the development of higher analytical thinking skills and the acquisition of rich narrative and interpretive understanding. Some geography scholars, whose discipline is embedded in visual representation practices, worry PowerPoint is commanding an "epistemological monopoly [that] reinforces the interchangeability of content within the single (re)presentational system" (Crang, 2003, p. 239) and carries unfortunate corporate undertones (Matless, 2003; Rose, 2004). In this sense, PowerPoint may prove to be a "killer app" superceding a variety of classroom practices and potentially rendering obsolete valuable, perhaps critical, knowledge forms.

Sherry Turkle (2004) suggests productivity software like PowerPoint "constitute a particular aesthetic in educational computing" (p. 101). PowerPoint promotes a particular way of thinking, one that "does not encourage students to make an argument [but rather]

to make a point." (p. 101). Digital media researcher Jamie O'Neil (2005) uses Bourriaud's theory of relational aesthetics to examine "how the medium of PowerPoint effects (or affects) the message" (p. 84). His intent is to dislodge the common instrumental, effective view of PowerPoint and install a critical, affective, experiential one. O'Neil concurs with artist David Byrne's claim that PowerPoint "tells you how to think as it helps you accomplish your task" (Byrne, 2003, p. 3) and welcomes the arrival of "critical PowerPoint artworks (or covert interventions) as a mode of resistance to groupthink" (O'Neil, 2005, p. 84).

What does all this mean for educators using PowerPoint in their classrooms? Studies show no significant gains in academic performance. At the same time, there is an appreciable increase in positive feelings towards instructors using PowerPoint. Finally, critical analyses are aligned on this point: PowerPoint tends to encourage a particular way of thinking, a way that may have questionable—or at least limited—merit in academic environments.

Human environmental aesthetics

In an effort to sketch a ground of inquiry that incorporates the day-to-day effective use and intent of presentation software in college classrooms while allowing for O'Neil's radical aesthetic critique, I adopt a human environmental aesthetic approach to studying PowerPoint. Human environmental aesthetics exercises a larger sense of aesthetics. Specifically, it investigates our immediate, embodied experience of the environment, recognizing sense of place as "a complex field of perceptual experiences involving a person and a setting, together with the range of historical and cultural

influences, knowledge, and meanings that invariably imbue that field" (Berleant & Carlson, 2007, p. 16).

Human environmental aesthetics—in this case classroom aesthetics—encompasses a broad range of "background" (Sparshott, 1972) concerns, including but not limited to school architecture and building materials, classroom dimensions, shape and layout, choice and organization of artifacts, color, lighting, heat, sound, smell, texture, cleanliness, as well as the kinds and qualities of movement or paths—activities and relations—enabled, discouraged or prohibited within the classroom space. This total environmental complex—from primal sensory impressions to the felt, meaningful presence of others, from the intentionality or fundamental orientation of the teacher to the variety of artifacts at hand—gives expression to "life values" (Hospers, 1946, p. 14), which are, at the very least, pre-reflectively apprehended. Classroom aesthetics affect classroom mood and atmosphere, develop tastes and cultural sensitivities, and tacitly frame, shape and habituate particular ways of thinking, being and doing in the world.

I begin by addressing PowerPoint as an evocative object (Turkle in Coutu, 2003). I describe its "Gatesian" aesthetic, that is, the distinctive fashions of knowledge PowerPoint suggests to a teacher in preparing a presentation, as well as the particular forms of presentation this software subsequently enables in the classroom. The balance of this paper examines PowerPoint's capacity for human and pedagogical habitation along several key aesthetic dimensions identified by Pauline von Bonsdorff (2007): affordance (Gibson, 1966), enticement (Hildebrand, 1999), generosity, and recognizability. To these I add a fifth: virtuosity or grace (Melchionne, 2007).

The sensuous surface and shape of knowledge

While some may hesitate to dub PowerPoint a new art form, there may be little doubt this presentation software is significantly altering the visual landscape of college classrooms. The PowerPoint aesthetic is a by-now familiar experiential amalgam of low ambient lighting, bright slides with bulleted text set against business-friendly stock backgrounds, downloaded pixelated graphics, high resolution stock images, surprising bursts of yeehaw sound effects, occasional video clips, slick slide transitions, and an off-to-the-side presenter, who, with varying degrees of skill, orates the production into a cohesive whole.

PowerPoint presentations make both an effective (informational) and affective (aesthetic) appeal to the student. Like all artefacts—buildings, machines, objects, art—PowerPoint slides are shaped by two interacting design interests or ideals: the "engineering design ideal of efficiency," and the "artistic design ideal of beauty" (Mitcham, 1994, p. 229). Engineering is occupied with functional efficiency, the artistic with formal quality. The balance or imbalance struck between these two concerns—the informative and the poetic (Holtham, Ward, & Bohn, 2002)—is realized in the structure of PowerPoint as a medium, in the overall design of every slide deck, as well in the details of individual slides.

The teacher, who must assume the role of both engineer and designer, easily encounters certain incommensurables in composing a PowerPoint slide. A simple example: what font and background colors to use? As the engineer-designer she is preoccupied with legibility and visual "ease" or swiftness, as artist with aesthetic appeal

and the evocation of a mood and experiential structure concordant with the subject at hand. High contrasting colors, like yellow text on a blue background, may be scientifically demonstrated to be optimally legible (Bruce and Foster, 1982; Radl, 1980). However, the student, while well able to read the text, may also find this color combination aesthetically irritating or discordant with the topic at-hand. That is, particular color combinations may prove "efficient," but carry a negative aesthetic value. Interestingly, Misanchuk and Schwier (1995), in an exhaustive review of the empirical evidence regarding screen legibility and color, conclude that the existing knowledge base is inconclusive, yet it has orbited "a core of undefended advice based on little evidence" (p. 1).

This relatively uncomplicated example hints at the effective, affective, and ultimately pedagogical complexity of this new venture in slide design combining color, image and text. Of course, color is merely one aspect of the "sensuous surface" (Hospers, 1946, p. 9), the first level of aesthetic experience. Stepping in a little further, we encounter the *form* of PowerPoint. The shape of the slide deck itself is relatively simple: it consists of a linear string of rectangular slides. But this straightforward, preset form has significant implications pedagogically. For example, a predetermined linear structure tends to preclude divergence in the lived context of the class, discouraging questions and dialogue (Adams, 2006). If all content is predetermined, and the manner of presentation decided in advance, then the unbidden or unexpected is essentially foreclosed. Similarly, the predictable rigidity of this preset form tends to erode the promise of spontaneity, that is, that the classroom is an open space in which anything can emerge. One university

professor describes the dilemma like this:

> In the classroom, PowerPoint is a representation of my presentation—an imagining of what my presentation would be, could be. But in the actual moment of teaching, things are often otherwise. In the midst of teaching, my slides and I sometimes come into conflict with one another. Then I feel fragmented, forced to choose this particular outcome—what is represented up there on the slides—over the felt relation with my students—what seems to present itself to me in the moment. I am committed to do this PowerPoint. I cannot now easily choose to do something else.

When a teacher uses PowerPoint, he or she commits to the unfolding of a particular form of teaching and learning, to a pre-determinate story wending its reckoned path to a decided conclusion. A PowerPoint presentation prepared beforehand is also an investment, visible proof of preparation and organization in the face of the contingent, indeterminate lifeworld of the classroom. To abandon such obvious evidence of competence may strike as fool-hearty, exposing oneself to an uncertain, unprepared-for future. So while PowerPoint can certainly help organize a lecture, students' knowing and wondering may be simultaneously disenfranchised and suspended.

The form and content of individual slides may vary greatly. Even so, certain paradigmatic patterns are distinguishable within each 4:3 frame. The most familiar of these is bulleting, the cognitive and visual organization of knowledge into lists and hierarchies. As the default slide format in PowerPoint, bulleting has become a significant "line of force" (McLuhan, 1964) in reshaping how knowledge is represented and presented visually (Tufte, 2003) and orally (Parker, 2001), cognitively creating a sort of "epistemological monopoly" (Crang, 2003, p. 239). Tufte (2003), an expert in visual communications, claims that this particular style of structuring information tends to fragment and over-simplify, which can lead to gross generalizations, superficial

reasoning and erroneous conclusions. PowerPoint "empowers the provider of simple content…[but] it risks squeezing out the provider of process—that is to say, the rhetorician, the storyteller, the poet" (Parker, 2001, p. 76) whose thoughts are not easily rendered as a brief list of bullet points. Recognizing this, Cliff Atkinson (2005) has developed a PowerPoint storyboard template in an effort to move beyond bullet pointing and reinstate the structure and rhetoric of story into boardroom presentations.

Indeed, unlike text in a book or journal, text on the screen is "subject to the logic of the image" (Kress, 2003, p. 10). Placing the written word in an aesthetically interpreted visual space is a significant change in our accustomed literate apprehension of text. When we read a book, the text quickly become transparent as we grasp its hermeneutic significances. That is, we move beyond simply looking at regular alphabetic black marks on a page, beyond even the words themselves, and enter "the space of the text" where personal identity, ordinary temporality, and subjectivity may be suspended, especially in the narrative text of story (Blanchot, 1982). Such absorption in a text depends foremost on habituation to a basic set of conventions (e.g. that text flows from left to right).

On a PowerPoint slide, these habituated visual conventions of the text are often disrupted and challenged by other visual modes and vocabularies—color, size, bolding, animation, placement and proximity to other text and images. Here, text is still read as linguistic gestures but it is also read as a visual object, one part of a larger framed composition. Visual grammars affect the meaning significance of the text, as do surrounding and background images. Some of these affects are subtle; others are more

memorable and striking. One way or another, PowerPoint introduces a new collection of visual surfaces, structures and stylized default images into the classroom, that inevitably affect the ways knowledge is represented, presented by the teacher, and subsequently apprehended and held by students.

PowerPoint inhabited

From a phenomenological perspective, that is, within the situated, relational, embodied realm of the lived space of the classroom, a PowerPoint presentation is "never [viewed] merely a visual object…nor is it a mere tissue of functions" (Jager, 1985, p. 222), rather it is *inhabited* by teacher and students alike. Along these lines, von Bonsdorff (2007) suggests we may realize human habitation aesthetically according to four key elements: affordance (Gibson, 1966), enticement (Hildebrand, 1999), generosity, and recognizability. I add to these a fifth dimension of aesthetic relevance: virtuosity or grace (Melchionne, 2007).

Affordance

The term "affordance" (Gibson, 1966) refers to all possible activities an object or an environment enables, offers or affords, as well as the needs served by it. Escalators, for example, afford movement from one floor to another. For a teacher, PowerPoint affords the rapid organization of a professional quality slide presentation, along with the gathering of other digital media—sound, graphics, video—together under a single file. Affordance also depends on individual abilities in relation to the object or environment: escalators do not afford transportation for those confined to a wheelchair; certain slide text/background color combinations are illegible by persons who are color-blind.

Gibson describes affordance as "a radical hypothesis, for it implies that the 'values' and 'meanings' of things in the environment can be directly perceived" (1979, p. 127). He credits his use of the term affordance to Kurt Lewin's description of the *Aufforderunscharakter* of environments and objects. Lewin (1926) illustrates:

> The beautiful weather, a certain landscape invites one to go for a walk. A staircase entices the two-year old child to climb up and jump down; doors entice one to open and shut them, little crumbs to pick them up, a dog to pet it; the sandbox to play in it; chocolate or a piece of cake to be eaten, etc. (p. 350)

Around that time, American philosopher George Herbert Mead (1934) similarly wrote of armchairs "calling out" for us to sit in them (p. 278-80). Phenomenologically speaking, we often "hear" objects and aspects of the environment as invitations to partake of and participate in the world in some way. What then can we say about PowerPoint's vocative invitation to students and teachers within the lived space of the classroom?

Enter teacher with trolley replete with laptop, mouse and data projector. Untangling the garage-band knot of electrical cords and connector cables, the teacher connects, plugs in, and turns on laptop and projector. This process is sometimes accompanied by palpable anxiety surrounding the stages of equipment hook-up, and worries about self-competence in the face of difficulties or breakdown and the implications of "no PowerPoint" to the fate of the class. The projector hums at last, the slides are cued up.

The simple act of drawing the blinds or switching off the light, darkens perceptibly the hue of the wall, softens the faces of students. The teacher becomes less visible; the projected slide shines brighter. The mood changes, the classroom atmosphere shifts. PowerPoint reconfigures the classroom as a cinematic space, inviting students to

become spectators, the teacher to orate, narrate the slides from the side. This cinematic moment is an invitation to sit back, get comfortable and (hopefully) enjoy the PowerPoint presentation with a certain sense of passivity. A subtle change occurs in the students' attitude and orientation: students listen to a talk or lecture, look at overheads, but watch a set of PowerPoint slides. The large, bright slideshow invites students to become a particular kind of audience, "invigorated or drowsy, [but] a generally passive audience that is rarely called upon to really interrogate the images" (Crang, 2003, p. 242). The student is released to the self-evidential text and pictures as presented by the single-file parade of slides.

From the moment the very first slide appears, PowerPoint commands an enviable authority and appeal in the classroom. Without hesitation, students turn expectantly to the new slide, but too, its radiance has already drawn and captured the students' gaze. All eyes look to the projection screen located at the front. The slide, by virtue of its sheer visual presence, demands to be looked at, grasped, read, and re-read within the context of the teacher's talk. Meanwhile, the teacher's talk is structured and interpreted alongside and within the context of the slide. Each new slide transition or animated bullet point draws the student's attention anew, PowerPoint's irresistible invitation issued again, to be noticed, read and interpreted. A particular way of being, thinking and doing in the world of the classroom is enacted, a distinct form of teaching and learning sponsored and enabled. With PowerPoint, the teacher invites students to participate in a particular educational space, a space that foregrounds and authorizes the publicized slide, while pushing to the side and out of the light and limelight, the human teacher as well as the

students themselves.

Enticement and suspense

Enticement refers to an environment's facility to usher an inhabitant forward, to evoke curiosity for elements concealed ahead. An enticing environment offers "view[s] or … opportunit[ies] for movement from one space to another whose features are only partly revealed" (Hildebrand, 1999, p. 55). Veiled or partial presence builds the pleasure of anticipatory mystery, evoking curiosity and interest, tempting and encouraging the inhabitant further. As educational reformer John Dewey recommends, the student, like Samuel Taylor Coleridge's poem reader, "should be carried forward, not merely or chiefly by the mechanical impulse of curiosity, or by a restless desire to arrive at the final solution; but by the pleasurable activity of mind excited by the attractions of the journey itself" (Coleridge, 1984, p. 14). For Dewey, suspense is an essential quality of the memorable educational experience; suspense also serves to develop critical thinking through the exercise of suspended judgment. In his introduction to *The Collected Works of John Dewey*, Kaplan (1987) writes "suspense…is a matter of *experiencing* the journey, not merely knowing *about* it…suspense is in art an appetite which grows by what it feeds on" (p. vii). How might such suspense manifest in the lecture theatre? Consider for a moment, a teacher making use of overhead transparencies instead of PowerPoint slides.

The teacher, interrupted by a question, searches through the transparencies and, finding the desired one, moves to place it on the projector, but hesitates. Instead, he pulls it back towards his body, curling it a little so as to keep it partially hidden from the students. Some preliminaries are required, a sort of introduction, an enticement. "What

could be on the transparency?" the students wonder. At last the image or text is placed on the projection surface, mystery solved, or perhaps not. But, the students come to the slide with a questioning, wondering attitude.

With PowerPoint, this gesture of enticement is strangely absent, replaced by instantaneous segues, slide transitions prompted by a single key press or mouse click. Reflecting on particular gestures evident in PowerPoint presentations, Matless (2003) speculates that

> If visual languages operate in key ways through physical gestures of the speaker as well as the words spoken and images shown, then something changes when the gestures accompanying movement between technologies—gestures often indicating a move into a different register of analysis—are replaced by uniform, slightly hunched, downward-looking, mouse-clicking or cursor jogging action. The relation between speaker and image shifts in the technical gestures necessary to facilitate display. (pp. 225, 226)

Instead of allowing the contingencies of enticement, the uniform procession of the PowerPoint slide deck tends towards the unending tyranny of mechanization—"one damn slide after another"—rather than evoking a sense of mystery, potent interest or pleasant uncertainty. If the slides are made available ahead of time, such enticement seems quite unattainable. Of course, the possibility remains for individual slides to be enigmatic, or otherwise aesthetically compelling. The teacher too may evoke interest through other rhetorical means. But the general form of the PowerPoint slide deck makes no such promise. Its allure resides in its large blatant presence, not mystery.

Generosity

Generosity is discerned in the quality of care inhabitants devote to their environment. In a neighborhood, "generosity is manifest in the flowerbeds in front yards,

in idiosyncratically decorated houses, in storekeepers sweeping their sidewalks" (Relph, 1993, p. 37). It is evident in the time and energy the inhabitants dedicate to tending their dwelling place for its own sake, for the sake of beauty and creativity, and for the pleasure of visitors. Vivian Sobchack (2004) describes this capacity for generosity as passionate devotion to the material sensuality of the world.

> Being actively devoted to (rather than passively suffering) the embracing and enfolding of the world's— and one's own— objectivity, the body-subject experiences not a diminution of subjectivity but its sensual and sensible expansion— and an enhanced awareness of what it is to be material. I would argue that it is this sense of passion that provides the material foundations of our aesthetic behavior toward the world and others. That is, it allows us to understand in a primordial way the general pervasion in existence of material sense-ability. Our recognition of and care for ourselves not only as objective subjects who are capable of grasping and feeling the alterity of other worldly objects but also as subjective objects that can be experienced in such a way by others allows us the possibility of appreciating— and caring for— the form and substance of "things" external to ourselves. It also allows us to hope that the world and others' material grasp of us will be similarly appreciative and "care-full." (p. 290)

Generosity involves caring for and tending to the sensual, material qualities of our lifeworld.

For PowerPoint, generosity is a value that is not inherently problematic, but requires the teacher to exercise a measure of aesthetic care and sensitivity supported by a modicum of technical skill and understanding. Generosity may be simply perceived in the frequency of high fidelity images compared to lower quality, pixelated downloads from the Internet. It may be felt in the unusually formatted but apt slide layout, the thoughtful color scheme, or a special font resonant with the image or topic at hand. The gift of a finely crafted, aesthetically cogent presentation is surely a generous act.

Within the PowerPoint classroom, attention to lighting (e.g. creating a darkened

screen area while the teacher and student spaces remain appropriately lit) and to sound (e.g. reducing the distracting hum of equipment) expresses care for the perceptual life of the inhabitants. The extra time taken by a teacher to learn how to confidently operate the equipment, to set it up beforehand, are acts of generosity. Too, the readiness of the teacher to try a variety of different activities within and outside the site of the slides speaks to the spirit of spontaneity and generosity. This includes the willingness in the moment to embark on an unexpected vein of inquiry prompted by student questions. Along these lines, knowledge of the equipment and software allows easy transition between different teaching and learning modes.

Recognizability

Ease in finding one's way around, and "feeling at-home" describe different senses of an environment's recognizability. Recognizability includes spatial and visual clarity (ease of orientation and legibility), as well as those sensory qualities that give a feeling of dependability to a place, and continuity with what has come before. PowerPoint can offer a high degree of recognizability, that is, "finding one's way around-ness," for both teacher and student. The linear structure of the PowerPoint presentation itself is unusually simple to navigate, for both teacher and student. Bulleting and other ways of rendering text visually, as well as illustrative images can provide the student additional navigational clues in the context of a complex lecture.

Still, the single screen view of PowerPoint tends to completely obscure the view of the road immediately ahead and behind, and prevents comparison with the slides immediately proceeding. Compare this with the whiteboard or chalkboard. The analogical

nature of handwriting and hand-drawing allows continuous access to the road just traveled, up until the sweeping hand erases the board. Ideas and images are often allowed to linger in the background, providing places where the student can return visually for orientation and reference.

PowerPoint's aesthetic is now very familiar to anyone in post-secondary education and is increasingly so to those in grade school. Indeed, its prolific use has moved its visual style towards the all too familiar, the predictable and the tiresome. Nonetheless each 4:3 frame opens the possibility for the aesthetically new and provocative. Jarring, disconcerting, and irksome moments can and do occur regularly. Yet these too may be inevitably accepted and absorbed as examples of the recognized academic-style of PowerPoint: "mostly poorly designed, un-slick learned-material [that serves to] validate its authentic epistemological quality" (O'Neil, 2006, p. 89).

Whether and how the teacher or student comes to feel "at home" with PowerPoint is a complex question. The classroom itself, though, was already ready for PowerPoint. The hardware and software of the PowerPoint presentation is easily accommodated, arriving with minimal disruption into the front and center of the room. Pointing, presenting and showing are significant aspects of the activity of teaching, and PowerPoint enhances these pursuits admirably. At the same time, PowerPoint comes with a strong technological sensibility, and corporate aesthetic. Can one find a learning home in a high-tech office? Is this the milieu the academy and schools should be cultivating?

Yet as students and teachers become more accustomed to PowerPoint in the classroom, this slideware gradually becomes taken for granted. This of course is true of

any environment or object regularly visited or used. As we become habituated to an object, we take up residence in it, we inhabit it, but it also inhabits us. It becomes "incorporated…into the bulk of our own body" (Merleau-Ponty, 1962/2002, p. 142). We feel at home with it, because it has a home in us. Habituating to PowerPoint harbors a variety of implications, including a retreat of critical discourse regarding its presence. But habituation also opens up new horizons, for example, access to the aesthetic dimensions of grace and virtuosity, qualities honed through experience and thoughtful practice.

Virtuosity, grace and transparency: "making it look easy"

Grace "is style raised exponentially from formal delight to the rhythms of daily life, [it] is the art of drawing labor and pleasure together" (Melchionne, 2007, p. 186), the knack or skill of making something look easy. Grace is attaining aesthetic refinement in the efficient interaction with one's environment. The teacher using PowerPoint with grace displays a kind of virtuosity. The gesture of each new slide complements and harmonizes with the teacher's meaning and intent. The teacher authorizes and animates the slide. In turn, the slide makes more vivid, pronounced, and memorable the teacher's talk. Like an accomplished musician with an audience, such grace serves to set students at ease, facilitating transparent access to the subject or topic at-hand. The slide disappears as visual object, achieving "hermeneutic transparency" (Ihde, 1990, p. 82); it becomes the primary ocular site of engagement with the subject matter authorized by the pedagogical presence of the teacher.

I should like to turn briefly to consider the classroom environment itself, the place where PowerPoint finds its home in education.

Reminding Us What Schools Are For

The architectures of modern educational institutions implicitly carry the ideological assumptions that informed their design. Beliefs and decisions about what schools are for, what kinds of knowledge are prized and worthwhile, and how teaching and learning happens, all inform and are formed by the exterior and interior shape and layout of every school and classroom.

> The hierarchical relationship between teacher and taught is inscribed in the very layout of the lecture theatre where the seating arrangements – benches rising in tiers before a raised lectern – dictate the flow of information and serve to "naturalize" professorial authority. Thus, a whole range of decisions about what is and what is not possible within education have been made, however unconsciously, before the content of individual courses is even decided. These decisions help to set the limits not only on what is taught but on *how* it is taught. Here the buildings literally *reproduce* in concrete terms prevailing (ideological) notions about what education *is* and it is through this process that the educational structure, which can, of course, be altered, is placed beyond question and appears to us as a "given" (i.e. as immutable). In this case, the frames of our thinking have been translated into actual bricks and mortar. (Hebdige, 1979, pp. 12, 13)

The crayon-stained wooden tables and chairs of the art-room orient students differently to their world than the shiny laminated benches and steel-legged stools of the science lab. The cavernous gymnasium invites different kinds of play than the playground outside. Educator Max van Manen (1986) suggests that "the lived space of the classroom, its textural and spiritual qualities, should remind us of what schools are for" (p. 72). What then does PowerPoint remind us of?

In an aesthetically "thick" sense, that is, taking into account an object's surface and formal qualities as well as its expressive or "life values" (Hospers, 1946), PowerPoint instantiates, indeed, significantly fortifies, the transmission model of learning. As Rena Upitis (2004) shows, the transmission model is similarly perpetuated

through traditional school architectures, standard classroom geometries and choice of educational artifacts. These structures serve to foster certain power relations that can lead to pedagogies of oppression (Freire, 1970). Instead of acting as "critical co-investigators in dialogue with the teacher" (p. 68), students become passive receptacles wherein the teacher deposits unproblematized information.

With PowerPoint, all eyes are to the front; the center of formal authority co-resides in slide and teacher. The slides proceed predictably in a linear, assembly-line fashion. Information is formally banked: deposited, and accumulated in slide design and content, and its cognitive equivalent in the minds of students. Perhaps one reason that PowerPoint is so enthusiastically embraced by the educational system is that its corporate industrial origins harmonize so well with the present trends towards outcomes-based instruction. In a corporatist pedagogical environment teachers at all levels of the educational hierarchy are seduced to think of themselves as sales, business or industrial agents treating the students as customers or products of a technological complex driven by values of cost effectiveness and quality control. In some post-secondary institutions, instructors are now indeed required to prepare their teaching with PowerPoint materials that can be quality controlled by the administration and provided as evidence to students and the wider public that accountability is built into the very media of teaching and learning.

Conclusion

In exploring PowerPoint poetically in the classroom, I adopted a "larger sense" of aesthetics (Berleant & Carlson, 2007) to allow access to the whole "environmental

experience and the immediate and intrinsic value of its perceptual and cognitive dimensions" (p. 11). This expansive view shifts the aesthetic appreciation of human environments "beyond what is beautiful or pleasing to encompass the full range of intrinsic perceptual experience and the meanings we associate with it" (p. 15). From this vantage, an aesthetic critique of PowerPoint in the classroom was drawn that encompasses the pedagogical significances and contexts within which it is intentionally situated and synaesthetically perceived.

Technology compels us towards reshaping knowledge and practices into more and more efficient order (Heidegger, 1977). PowerPoint is no exception. Heidegger offered the hopeful suggestion that modern technology carries within it its own saving power: *poeisis,* poetic revealing. Indeed, "the danger [of modern technology] is not the destruction of nature or culture but a restriction in our way of thinking—a leveling of our understanding of being" (Dreyfus, 2004, p. 55). Coming to a finer understanding and appreciation of PowerPoint's aesthetic possibilities, for example, its capacity for generous inhabitance beyond the efficiencies of its default styles, may yield "saving" possibilities. Further in-depth aesthetic critique may reveal other possible sites of aesthetic meaning where teachers may poetically subvert the mechanistic order PowerPoint's form is quietly imposing in classrooms, subtly and indelibly shaping our ways of thinking, being and doing in the world.

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CHAPTER 8:

PAPER VII – EDUCATIONAL TECHNOLOGIES AND THE INVITATIONAL ADDRESS OF THINGS

> We are the be-thinged.
> (Heidegger, 1971, p. 181)

> The surprising conclusion is that objects are important not because they are evident and physically constrain or enable, but often precisely because we do not "see" them. The less we are aware of them, the more powerfully they can determine our expectations by setting the scene and ensuring normative behavior, without being open to challenge. They determine what takes place to the extent that we are unconscious of their capacity to do so.
> (Miller, 2005, p. 5)

Life today is intimately intertwined with, mediated by, and at times surrendered to the everyday things of our world: cars and credit cards, emails and iPods, cups and keys. Educational practices and learning activities are similarly caught up in, tethered to, and shaped by the artefacts at-hand: blackboards and books, calculators and computers, PowerPoint and plagiarism software. Yet for the most part, *things*—the material conditions of our lifeworld—are overlooked as incidental or inconsequential entities. This is hardly surprising: commonsense grants little or no agency to inanimate objects, a belief neatly encapsulated by the National Rifle Association bumper slogan: "guns don't kill people, people do." However, our digitally-enhanced world is contesting this naïve severing of intention from non-human entities, and asks instead that we re-examine the complexity of human-technology relations. As Bruno Latour (1999) insists, it is neither the person nor the gun that kills, but the "citizen-gun" or "gun-citizen," a complex human-technology hybrid that, when assembled, necessarily engages new intentions,

associations and actions.

Recognizing technologies-in-use as agential in co-shaping the existential conditions of our lifeworld suggests educational researchers may be obliged to consider such technologies as relevant research participants. That is, if we admit that an artefact may be exercising a non-neutral influence over us—encouraging, discouraging, inciting or coaxing the one who grasps hold of it to participate in the world in prescribed and circumscribed ways—then, as human science researchers, we might want to account for the shades and spectrums of such influence. Moreover, human-technology relations are not unidirectional: we simultaneously interpret, manipulate, adapt, use, misuse and even abuse artefacts in the service of our own intentions and ends

> The implementation of technologies (digital educational technologies included) involves not so much learning how to use a new technology "out of the box," but rather users adopting, shaping and fitting new technologies into their daily practices, practices which are also simultaneously shaping and adapting to the shifting forms of that new technology. (Khoo, 2007, pp. 87-88)

So, how might we begin to "trace the contingent simultaneity of intentions, decisions, affordances, interpretations, uses, codes, programmes…to reveal the nexus that co-constitutes the ethico-political site of technology" (Introna, 2007, p. 22) in educational settings? Or put in the language of qualitative inquiry, how might educational researchers *interview* an artefact in an effort to disclose its material agency in co-constituting teaching-learning worlds? Expanding on the notion of what it means to "interview" a research participant, I refer to the etymological origins of the word "interview". It is derived from the Old French verbal noun *s'entrevoir*, composed of two parts, *entre-*, meaning mutual or between, and *voir*, to see, which together mean "to see each other,

visit each other briefly, have a glimpse of." Thus to "interview an educational artefact," is to catch insightful glimpses of the artefact in motion, as it performs and relationally mediates the gestures and understandings of its employer, involved others, and associations with other objects in the pedagogical environment.

The aim of this paper is to suggest possible ways of "interviewing" technologies-in-use—"giving artefacts a voice" (Waltz, 2004) —when studying today's digitally-enhanced learning environments. In particular, I propose "listening" for the invitational quality of things as an opening heuristic to assist educational researchers in undertaking this inclusion. Attending to the invitational character of things attunes the researcher to the "pathic" dimensions of the lifeworld (van Manen, 2007):

> Pathic knowing inheres in the sense and sensuality of our practical actions, in encounters with others and in the ways that our bodies are responsive to the things of our world and to the situations and relations in which we find ourselves" (p. 12).

Orienting to pathic or lived sensibilities, a researcher is positioned to grasp or catch a glimpse of the nature and quality of the rapport that develops between human beings and their technologies "in the wild" (Hutchins, 1995). The discussion is informed foremost by hermeneutic phenomenology, but also by the literatures of techno-science, actor-network-theory, media ecology, and the philosophy of technology.

Back to the Things Themselves

Hermeneutic phenomenology aims to describe our prereflective experiences—here, with the technological things of our teaching and learning lifeworlds. The clarion call of phenomenology, "back to the things themselves" (*Zu den Sachen selbst*), encapsulates this philosophy's plea to revive living contact with the world. It is an appeal

to return to concrete, lived human experience in all its richness. Phenomenologically,

> Things pack and harass [human] existence in a variety of ways which determine the spectrum of not only bodily, but also spiritual, feelings and emotions. Things cheer, entertain, satisfy. Things intimidate, scare, hamper. Things embarrass. Things depress. Things transform. Things escape. Things challenge and defy. Things embroider existence and make it empty. (Benso, 2000, p. 144)

Our primordial involvements with the material conditions of our world thus figure prominently in phenomenological description and reflection. From the handiness of Martin Heidegger's hammer, to the focal practices gathering around Albert Borgmann's warm hearth, from Maurice Merleau-Ponty's knowing typing hands, to the surgical sensitivity of Don Ihde's dental probe, phenomenology has been serving to disclose and adumbrate our primal, pre-reflective, corporeal involvements with the things of our lifeworld. Indeed, phenomenology has a primary interest in *letting the things of the world speak for themselves* (Heidegger, 1962).

Handiness and the transparency of things-in-use

Heidegger, whose careful reflections on our everyday involvements with instrumental artefacts like hammers and bridges, peasant shoes and jugs of wine, gave the first solid purchase on the experiential structure of *Dasein*'s or human *being's* engagements with things. Things or "tools" exist/are for us in two different modes: ready-to-hand (*zuhanden*) and present-at-hand (*vorhanden*). Consider for a moment the hammer, as Heidegger did. Phenomenologically speaking, we do not usually encounter a hammer as a discrete, noticeable object, that is, in its present-at-hand mode. Rather we tend to engage a hammer directly through using it, in its ready-to-hand state or handiness. In this handy encounter, the hammer itself slips from obviousness, becoming essentially

invisible to us, taken-for-granted. Hammering a nail in the wall, we are focused on the picture-hanging, the project we are engaged in, not on the hammer itself. As an extension of our lived body, the hammer is, similar to our everyday experience of our bodies, passed over in silence—"*passé sous silence*" (Sartre in Bleeker & Mulderij, 2002).

Consider another example: the blind man's cane.

> We hand the blind man a cane and ask him to tell us what properties it has. After hefting and feeling it, he tells us that it is light, smooth, about three feet long, and so on; it is occurrent for him. But when the man starts to manipulate the cane, he loses his awareness of the cane itself; he is aware only of the curb (or whatever object the cane touches); or, if all is going well, he is not even aware of that…Precisely when it is most genuinely appropriated equipment becomes transparent. (Dreyfus, 1991, p. 65)

When we are writing a scholarly paper or an email, we are barely aware of our typing fingers or the keyboard. Our fingers serve us silently, falling transparently on the vaguely present keyboard, allowing us fluent engagement with the higher-level business at hand: writing. As Heidegger (1962: 98) makes clear, "the less we just stare at the [tool], and the more we seize hold of it and use it, the more primordial does our relationship to it become." Only when we accidentally hit our finger with the hammer do we suddenly awaken to our throbbing finger and the hammer as an obvious, present-at-hand object. Yet this present-at-hand modality is always "ontologically derivative from and founded on the disclosure of things as equipment" (Benso, 2000, p. 82). The hammer suddenly erupts out of the midst of our everyday handling of things, a mode of being that is so self-evident that we are oblivious to it. "In their equipmental being, things are invisible, unnoticeable, and unnoticed, taken for granted" (Benso, 2000, p. 82). To be what it is, a tool must recede from visibility.

"Things thing"

> Following Heidegger's reflections on bridges, Graham Harman (2002) writes:
>
> Quite apart from the bridge as something perceived, there is the *subterranean bridge-being* [my emphasis]. The bridge is set loose on the earth as a distinct and independent power, giving birth to a universe in which canyon-effect and river-effect are more or less neutralized, partially surpassed in their former role as obstacles. (p. 220)

Each thing bears an ontological force, uniquely its own. Just as we talk about human *being*, we may also talk of bridge being, river being, pencil being, chair being, and hammer being. Heidegger describes this ontological quality more provocatively: *Things thing.* A bridge bridges. A hammer hammers. A PowerPoint presentation points powerfully.

When a things things, it discloses a world to us, a world unique to the being of that thing. Each technology reveals a new horizon of possibilities to us. Thus in trying to catch glimpse of the mediating influence of a technology on our activities and our ways of interpreting the world, we must consider a technology's *two-fold* character: its concreteness—its ontic, present-at-handness or "sensible and explorable profile"—as well as its unique being-in-the-world—its ontological, ready-to-handness or "irreducibly veiled activity" (Harman, 2002), the world the particular technology pre-reflectively opens to us as we grasp hold of and engage it.

We are honeyed by the things of our lifeworld

As a thing or technology opens or discloses a world to us, we are simultaneously "honeyed" by this world (Merleau-Ponty, 2004). Merleau-Ponty explains: "Honey is a particular way the world has of acting on me and my body" (p. 62). Dipping our fingers

in a jar of liquid honey, it slowly slides through our fingers and returns to the jar, even as it continues to adhere, embroiling our hands in a sweet, sticky mess. Honey describes the special quality of our relation with things: "we are moved or compelled to treat [the object] in a certain way…[the object] has a particular way of seducing, attracting or fascinating the free subject who stands before it" (p. 62). We are, in Heidegger's words "the be-thinged" (1971, p. 181). We are pre-reflectively conditioned—moved, shaped and occasionally decided—by the things of our world.

Things gather and stay human practices

Returning to its etymological origins, Heidegger (1971) tells us that a "thing," *res*, is a "gathering." While this original sense of thing has been forgotten, resurrecting it now helps convey a fundamental insight of thing being: things gather (assemble) and stay (stabilize and sustain) human practices. Each new thing congregates us differently, involving us in new practices and ways of being and knowing the world. Borgmann (1984) suggests that some modern technologies, which he calls "devices," no longer gather us in meaningful activities or "focal" practices. He gives the example of the family hearth, which in modern homes has been replaced by the furnace. The hearth was once a place where the family gathered, shared evening conversation, as well as the daily chores involved in tending it. Today's central heating system no longer congregates us, and thus the practices previously stayed by the hearth have attenuated and disappeared.

The Invitational Character of Things

For Alphonso Lingis (2004), the totality of the immediate environment that we inhabit, our lifeworld, is best described as "a *milieu*—a field of intensive forces, vibrant

according to their own inner codes" (p. 278). Ivan Illich (1996) similarly coins the phrase *le milieu technique* to refer to the irresistible embrace of the high technology environs we find ourselves dwelling in today. The technological milieu is shaping substantially—insinuating itself, habituating us, and simultaneously informing and reinterpreting—how we act in and perceive the world. In order to understand how this occurs, Illich (1996) suggests we "listen to what [modern] objects [of technology] say, rather than do" (p. 64). To "hear" what an object of technology might be saying to us, we must enter the realm of lived experience, and orient ourselves to pre-reflective or "pathic" knowing. Within the situated, relational, embodied realm of lived space, objects—material aspects of our milieu—are perceived or "heard" as invitations: "cool water invites us to drink, the sandy beach invites the child to play, an easy chair invites our tired body to sink in it" (van Manen, 1997, p. 21).

The invitational quality of a thing is always "heard" in light of our *intentionality* or indissoluble connection and orientation to the world as child, parent, teacher, etc. The sandy beach commands the child differently than the watchful parent, or the teenage sibling in the company of friends. The notion of intentionality expresses the phenomenological insight that we do not exist apart from our world, but are always already intimately intertwined, caught up in and tacitly informed by it: "human experience and consciousness necessarily involve some aspect of the world as their object, which, reciprocally, provides the context for the meaning of experience and consciousness" (Seamon, 2002). The world also discloses itself differently to us depending on the historical epoch we are living in. We currently suffer (and enjoy) the

sway of *das Gestell* (the "enframing"), the technological way of being: the things of the world tend to appear and speak to us as something to be used and manipulated (Heidegger, 1977). Finally, the things of technology are themselves a complex of "instrumental intentionalities" (Ihde, 1990). I will have more to say about this point below. But for now we may recognize invitational quality as the appeal issued from the pathic interplay between human being (subject) and thing being (object), a substantive-hermeneutic tangle of person indwelling his or her world.

Of course, beaches and easy chairs do not "speak" to us in the same way as people do. Nonetheless, we can see how, having prereflectively "heard" and responded to the invitational quality of a thing, we are entered into a primordial "rapport" (Heidegger, 1971) with it; we become existentially and hermeneutically engaged. The invitational quality of things gives entrance to this prereflective rapport. Attending to invitational quality or appeal allows a first glimpse of our pre-reflective or "honeyed" involvement with the things of our lifeworld.

Affordance

Before continuing, it is worth briefly investigating a related term circulating in the literature of human-computer interaction and design studies (cf. Don Norman): affordance. Ecological psychologist, J.J. Gibson (1966) describes "affordance" as the action possibilities an object (or an environment) enables, offers or affords, as well as the needs served by it. For example, a rock affords a lizard shelter from the sun. Certain objects afford a particular activity, while other objects may not. We may imagine another rock situated so that it seldom affords shelter for a lizard. Affordance also depends on the

action capabilities of the individual or animal. The surface of a lake does not afford walk-on-ability to a wolf or a fish, but it does to a water skater insect. An open window on second floor may afford entrance to the burglar, but not to the toddler in the yard. Affordance is thus functional—dependent on the enabling (and constraining) material possibilities of the object—as well as relational—dependent on the material possibilities of the creature relative to the object.

> An important fact about the affordances of the environment is that they are in a sense objective, real, and physical, unlike values and meanings, which are often supposed to be subjective, phenomenal and mental. But, actually, an affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy (Gibson 1979, p. 129).

Phenomenology similarly transects subject-object boundaries, striving to describe the "person-world intimacy in a way that legitimately escapes any subject-object dichotomy" (Seamon, 2002). Experience, as pragmatist John Dewey reminds, "is 'double barrelled' in that it recognizes in its primary integrity no division between act and material, subject and object, but contains them both in an unanalyzed totality" (1929, p. 11). Gibson describes his notion of affordance as "a radical hypothesis, for it implies that the 'values' and 'meanings' of things in the environment can be directly perceived" (1979, p. 127). That is, affordance is perceived or apprehended pre-reflectively by the creature relative to its own materiality; but too, the things themselves materially presence values and meanings. Meaning is discovered in the world in the way things reveal themselves to a particular creature (or situated person). Gibson goes on to claim that, "the affordance of something does not change as the need of the observer changes…The object does what it does because of what it is" (Gibson, 1979, p. 139).

Gibson (1979) credits the term affordance to Kurt Lewin's *Aufforderunscharakter* that, interestingly, J. F. Brown translates as the "invitation character" of an object (Dant, 2004). Lewin (1926) illustrates:

> The beautiful weather, a certain landscape invites one to go for a walk. A staircase entices the two-year old child to climb up and jump down; doors entice one to open and shut them, little crumbs to pick them up, a dog to pet it; the sandbox to play in it; chocolate or a piece of cake to be eaten, etc. (p. 350)

Around the same time as Lewin, American philosopher George Herbert Mead (1934) also writes of armchairs "calling out" for us to sit in them (p. 278-80). Previously in 1920, Jakob von Uexküll ("Affordance," 2007) describes objects as "functionally coloured" (*funktionale Tonung*).

In 1988, Don Norman appropriates the term affordance for Human-Computer Interaction (HCI) and design communities, and constricts its definition from Gibson's value-laden, ecological insight to mean the "perceived and actual properties" of a thing:

> The term *affordance* refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used…Affordances provide strong clues to the operations of things. Plates are for pushing. Knobs are for turning. Slots are for inserting things into. Balls are for throwing or bouncing. When affordances are taken advantage of, the user knows what to do just by looking: no picture, label, or instruction needed." (Norman 1988, p. 9)

Norman's interest as a designer is the creation of artifacts whose affordances, or operating and use possibilities, are materially encoded so as to be self-evident to the "user". The focus is utility, usability and user-interface. The "face" of a designed thing is intended to prereflectively communicate its function, that is, what something "is for." Unlike the things of nature, where affordances are perceived via natural material characteristics, the affordances of manufactured objects are explicitly "designed" into the

artifact. Here "manufactured," which literally means "worked by hand," describes the process of manipulating and honing a thing to serve an intended purpose or task. For Norman, the "good" artifact is one designed to successfully communicate its affordances directly to the user. If an object's affordances are not apparent to its (potential) user[15], it is, for the moment, useless. For the phenomenologist, such apparentness or appearance is first a pathic sensibility, prereflectively grasped as we appropriate an instrument for our purposes. Unfortunately, Norman's version of affordance tends to downplay the pathic enfoldments of human-technology relations—the ontological—and situates primary interest in the ontic, or the explorable, designed surface of things.

Meanwhile, the social constructivists argue that objects themselves have no such material "properties" as affordances. Technologies are the outcome of discursive practices and thus attain and retain currency (their "reality") only as socially negotiated texts.

> Technologies do not have a momentum of their own at the outset that allows them…to pass through a neutral social medium. Rather they are subject to contingency as they pass from figurative hand to hand, and so are shaped and reshaped. Sometimes they disappear altogether: no one felt moved, or was obliged, to pass them on. At other times they take novel forms, or are subverted by users to be employed in ways quite different from those for which they were originally intended. (Bijker & Law, 1992, p. 8)

Indeed, the question of the material vs. the social has been animating debate in the field of Science, Technology, and Society (STS) for decades. Do technologies decide the social, or does the social decide the technologies? Actor-network-theorists, like John Law

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[15] Design does not necessarily end with the manufactured object; designers are also understood to be "configuring" their users through the architected object (Pinch, 2003; Woolgar, 1991). Such user configuration is illustrated below in the shaping of "good" programmers via "opinionated" software.

(1991) strive to overcome this dichotomy by trying to "talk about the social-and-the-technical all in one breath" (p. 8). What is important to note here is the recognition that human-technology relations are also interpretive and socially-negotiated. Such "subjective" texts necessarily complicate, but do not negate, the "objective" material affordances or contingent determinations of things.

Hermeneutic phenomenology acknowledges the veracity of both positions: both insights are experientially sound. The lifeworld is characterized by the *transpermeation* of subjects and objects, through and by, as Merleau-Ponty (1968) puts it: the "reciprocal insertion and intertwining of one in the other" (p. 138). For Actor-Network-Theorists, this human-technology relation is signaled with hyphens where human and technology may be commutatively switched back and forth, recognizing the "ambiguous interplay of subject and object in the lifeworld" (Rosen, 2006, p. 24) as well as symmetry of agency. Post-phenomenologist Ihde indicates this co-relational intertwining of human and technology with varying hyphens and brackets designating different types of relation (rather than equality of agency).

Attending to the invitational or pathic quality of things in today's classrooms

Attending to the invitational or pathic address of things draws us nearer to the existential conditions and hermeneutic dimensions of human-technology relations as they unfold, articulate, and habituate in the spontaneous flow of everyday life. Returning to Illich's enjoinder that we "to listen to what the objects of technology say, rather than do," let us consider a brief example. Investigating PowerPoint in the classroom, I might ask: What is PowerPoint's vocative appeal to students and teachers within the lived space of

the classroom? What invitation does PowerPoint make to a teacher as she or he is composing a teaching presentation?

At the teacher's desk

The teacher, sitting in front of her computer screen, launches PowerPoint. "'Click to Enter Title, • Click to enter text". The new slide invites the teacher to shape his or her knowledge in a particular way, with title and a set of bullet points. Of course, this is merely an invitation, not an injunction. And yet, thinking back to the PowerPoint presentations you may have seen over the years, many PowerPoint slides follow, for the most part, this very particular form. Perhaps yours do too! Entering the presentation design world PowerPoint opens, the teacher is simultaneously enmeshed or *caught* by the particular design imperatives and decisions embedded in this software.

In the classroom

Enter teacher with trolley replete with laptop, mouse and data projector. Untangling the garage-band knot of electrical cords and connector cables, the teacher connects, plugs in, and turns on laptop and projector. This process is sometimes accompanied by palpable anxiety surrounding the stages of equipment hook-up, and worries about self-competence in the face of difficulties or breakdown and the implications of "no PowerPoint" to the fate of the class. The projector hums at last, the slides are cued up. The teacher relieved, turns to the teaching world now opened by the slides.

The simple act of drawing the blinds or switching off the light, darkens perceptibly the hue of the wall, softens the faces of students. The teacher becomes less

visible; the projected slide shines brighter. The mood changes, the classroom atmosphere shifts. PowerPoint reconfigures the classroom as a cinematic space, inviting students to become spectators, while the teacher orates the slides from the side. This cinematic moment is an invitation to sit back, get comfortable and (hopefully) enjoy the PowerPoint presentation with a certain sense of passivity. A subtle change occurs in the students' attitude and orientation: students listen to a talk or lecture, look at overheads, but watch a set of PowerPoint slides. The large, bright slideshow reclines students to passively receive information. The student is released to the self-evidential text and pictures of the world (re)presented on the single-file parade of slides.

From the moment the very first slide appears, PowerPoint commands an enviable authority and appeal in the classroom. Without hesitation, students turn expectantly to the new slide, but too, its radiance has already drawn and captured the students' gaze. All eyes look to the projection screen located at the front. The slide, by virtue of its sheer visual presence, demands to be looked at, grasped, read, and re-read within the context of the teacher's talk. Meanwhile, the teacher's talk is structured and interpreted alongside and within the context of the slide. Each new slide transition or animated bullet point draws the student's attention anew, PowerPoint's irresistible invitation issued again, to be noticed, read and interpreted. A particular way of being, thinking and doing in the world of the classroom is opened (disclosed), a distinct form of teaching and learning sponsored and enabled. *With* PowerPoint, the teacher invites students to participate in a particular educational space, a space that foregrounds and authorizes the publicized slide, while nudging to the side and out of the light and limelight, the human teacher as well as the

students themselves.

Attending to the invitational quality of things gives aperture to the unique "ongoing horizon of meaning and action" (Introna, 2005: ¶7) a digital technology may unfold in the context of our teaching and learning worlds. And yet, the invitational quality is merely the opening bar of the rich symphony of possible conversations that may ensue as we engage with things. Here we must pause and once more consider the intermingling of intentionalities—of human and non-human—in shaping and informing lived experience. Returning to the teacher sitting at her work desk, we might begin to notice how her activity patterns and meaning structures are quietly *in-formed*—conformed, deformed, and reformed—by the architecture of invitations of the particular software she finds herself *inhabiting*.

Inhabiting PowerPoint

In PowerPoint, the teacher sees and understands her teaching world in light of the particular horizon of possibilities this software unfolds to her as she works: slides, menus, animations, Slide Sorter View, Normal View. As Ihde (1990) suggests, "technologies, by providing a framework for action,…form intentionalities and inclinations within which use-patterns take dominant shape" (p. 141). *In* PowerPoint, the teacher "does not, cannot separate" the software's possibilities and designs from her own: the aims and inscriptions of the Microsoft programming team and the teacher intentionalities and inclinations intertwine, enmesh and reorient. The teacher's world is translated into new vocabularies and presentation genres, expanding her possibilities of action while simultaneously framing and constraining that world as a succession of 4:3 slides.

Having answered the call of PowerPoint (its invitational qualities or affordances), the teacher enters a mode of human-technology engagement Chesher (in Suchman, 2007) describes as "managed indeterminacy" or invocation. "Invocation involves those actions that define the terms of engagement written into the design script or discovered by the participating user" (Suchman, 2007, p. 282). The teacher is now conversationally involved, enfolded and intertwined with PowerPoint. The teacher-technology relational boundaries blur and an intimate rapport sets in.

Technological or instrumental intentionalities

Returning to the ontological and material presence of things, we may begin to discern a spectrum of intentionalities dormant in objects that have been fashioned for a purpose, intentions that further complicate our relations with things.

> Although a designer cannot design people's interactions with a product, he or she has the possibility to design a product to invite or entice people to interact with a product in a certain way. For example, a luxurious fountain pen with its delicate gold plated tip and balanced grip invites elegant writing, while a cheap Bic pen seems to invite fast scribbles. It is of course possible to write neatly with both pens, but the design of the fountain pen more likely results in people writing elegantly. (Ross, Overbeeke, Wensveen & Hummels, 2008, p. 363)

The *design* of a technological thing adumbrates prethought ways of knowing and anticipated styles of doing in the world.

> Latent in every tool are unforeseen transformations…tools have always embodied latent narratives. A tool always implies at least one small story. (Nye, 2006, pp. 2, 5)

A tool may be employed for unexpected purposes and in unanticipated ways, but even so when engaged, a basic story tends to unfold along key plotlines or "lines of force" (McLuhan, 1964, p. 30). However, the specific hermeneutic and existential shifts these

lines of force effect over time is difficult to predict.

> For any medium has the power of imposing its own assumption on the unwary. Prediction and control consist in avoiding this subliminal state of Narcissus trance. But the greatest aid to this end is simply in knowing that the spell can occur immediately upon contact, as in the first bars of a melody. (McLuhan & McLuhan)

In phenomenology, "intentionality" is a technical term that refers to

> the inseparable connectedness of the human being to the world…Every conscious experience is bi-polar: there is an object that presents itself to a subject or ego…All human activity is always *oriented* activity, directed by that which orients it. (van Manen, 1997, p.181-182).

The human being shares an indissoluble umbilical with the "object that presents itself" to him or her. It thus becomes critical to reflect on how different objects simultaneously orient and direct the human being. This is not to attribute a reciprocal intentionality or consciousness to the object-that-presents-itself, but rather to recognize that the object materializes and thus orients a subject to its predetermined intent and design.

Consider for a moment a rock, a hammer, and PowerPoint. A hammer is clearly intended to accentuate "hammering," an activity that may also be done well with a carefully chosen rock, although probably more efficiently, predictably performed with a good hammer. The materiality of the hammer—its heft, smooth surface, composition of metal and wood—but also its design—a heavy, flat condensed surface securely attached to the end of a form-fit handle to leverage power—communicate its technological or "instrumental intentionality" (Ihde, 1990). We come to know how a hammer is used via the equipmental practices of our culture: we observe another using a hammer and grasp its potential. But more convincingly, it is our hand, in trying a hammer, which recognizes pathically the horizon of hammering possibilities such a tool opens to us. The hammer

"presents itself" to us as something to hammer with.

In contrast, the rock seems instrumentally agnostic: it lacks the hammer's intentionally crafted form. The rock may indeed "present itself" to us as something to hammer with. Or, it may appear as a perfect addition to our garden, or a candidate for skipping across the ocean's surface. More likely, the rock may not present itself to us at all, sunk seamlessly, invisibly into the texture of our lifeworld. But the hammer, by *design*, specifically invites a particular set of practices (hammering, pulling out nails, opening paint cans, etc.); the rock, outside of its natural material characteristics and a lucky shape, suggests no such obvious intention or design. Thus we might say the rock is "ambi-valent" with regards to intention. It has no latent subtext indicating a tooled, human purpose. We may then be tempted to suggest the hammer is "decisive" in its intention. But in practice, the instrumental intentionality of a hammer may be better described as "multi-valent". As a crafted instrument or tool, it tends to arc activity toward certain predetermined human practices for which the hammer is instrumental; nonetheless, the hammer may still "appear" and be used for unanticipated (not predetermined) human actions.

PowerPoint, too, is multi-valent. Digital technologies are literally inscribed plans and intentions, intentions that may at times be "subverted" (Squires, 1999) for other purposes. Software materializes—digitally encodes—algorithms. An algorithm is a technique, a specific method or way of doing something, made procedurally explicit. Indeed, except for the material hardware it runs on, software itself is nothing but a collection of instrumental intentions: pre-scripted ways of accomplishing specific tasks,

that is, prescribed practices. Software, as anthropologist Daniel Miller (2005) points out, makes apparent a property of artifacts more generally "as forming our anticipatory infrastructure" (p. 38).

We may thus begin to grasp the profoundly *non*-neutral influence digital technologies exercise in our lives, and the importance of accounting for their unique hermeneutic and existential sway in educational environments. Again, each new thing gathers us differently (or in the case of a "device," disperses us) instigating, stabilizing and sustaining new human practices.

By way of example, let us turn briefly to consider a term current in programming circles: "opinionated software."

Opinionated software and syntactic sugar and vinegar

The term "opinionated software" was coined, or at least popularized by David Heinemeier Hansson, the creator of *Ruby on Rails,* the latest star in the programming world. "Opinionated" denotes software specifically designed to make things easy to do one way and difficult to do another way. Such an approach seemingly contradicts the traditional software design ideal of maximum flexibility. In Hansson's words, *Rails*

> eschews placing the old ideals of software in a primary position. One of those ideals is flexibility—the notion that we should try to accommodate as many approaches as possible, that we shouldn't pass judgment on one form of development over another. Well, Rails does, and I believe that's why it works. With Rails, you trade flexibility at the infrastructure level to gain flexibility at the application level. If you are happy to work along the golden path that I've embedded in Rails, you gain an immense reward in terms of productivity that allows you to do more, sooner, and better at the application level. (in Dumbill,

2005)

Hansson describes his "golden path" as paved with "syntactic sugar" and lined with "syntactic vinegar." Syntactic sugar involves guiding the programmer to adopt certain ("proper") conventions or styles of programming, whereas syntactic vinegar is about discouraging the use of other ("improper") conventions and techniques by making them syntactically difficult to express. For some, Rails can potentially undermine a programmer's professional sense of structural aesthetics, and thus these dissenters advocate for "agnostic" rather than "opinionated" software.

In fact, *all* programming environments must strike a balance between the limitless, unconstrained potential of an open or agnostic software architecture and the decided, "golden" vision and circumscribed approach of a highly opinionated one. That is, "every piece of software is opinionated—it encourages (and discourages) certain ways of thinking, of solving problems, of structuring ideas. Software embodies a vision of the world" (Raymond, 2007, p. 11). Application software architectures like PowerPoint, by virtue of their specialized, precisely defined functions and algorithms, necessarily bound and direct user activities along specific pathways with varying combinations of syntactic sugar and vinegar. PowerPoint's golden path is well marked for teacher-travelers via default signage. For educational use, it must also be noted that PowerPoint's default settings—its sugar—have been chosen to appeal to business and sales audiences. It is not that PowerPoint necessarily precludes other ways of presenting ideas in a wide variety of knowledge forms; but rather, these other ways are less represented in part because it may not be immediately apparent to the teacher how to form them in this medium, how to step

away from the default settings and explore other possibilities. To do so requires thoughtful initiative, that is, wakefulness to the habituating trends embedded in PowerPoint's user interface and a willingness to flex it in other directions, or to choose not to use it when it is inappropriate to the teaching task.

Conclusion

Our being-in-the-world is evermore involved with, folded into, and transpermeated by the things of our post-human world, a world infused, bemused and con-fused by a growing host of predetermined, "opinionated" algorithms architecting and infecting our digital learning environments. Every digital technology discloses a unique world to us, a world that we are variously invited, demanded, and enticed to participate in. In taking up a technology's invitation, allowing ourselves to be entangled by its enchantments, we may find our own intentions, understandings and practices shifting with respect to those prescribed by the given technology and contextualized by the teaching-learning world it shows up in. It is critical that educational researchers begin to account for the increasing complexity of technology's pathic lines of force, the milieu of the 21st century. One step towards this end is attending to the invitation quality of things, so that we may begin to discern the multiple interests, intentions and tensions we have ourselves constructed and invited into our classrooms.

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CHAPTER 9:

ENDNOTES – TOWARD A PEDAGOGY OF TECHNOLOGY

> Technology seems to invest us with such power, although we seem to employ it without wisdom or holiness.
> (Romanyshyn, 1989, p. 2)

> If we cannot see beyond the glare of digital charisma, if we cannot presence that which is closest to daily life, if we cannot speak of technology in a language of revelation as opposed to appropriation, then our sure and certain fate will be to be reduced to the silence of a manufactured object.
> (Kroker, 2004)

Resistance is fertile

I began this study harboring some considerable animosity toward PowerPoint, indeed toward the integration of digital technologies in education more generally. Among the manuscript reviews for "PowerPoint, habits of mind, and classroom culture" (Adams, 2006), one of the referees playfully but poignantly reminded me I still had some way to go in coming to terms with this animosity:

> I certainly enjoyed Professor Ludd's extremely articulate discussion of the evils of PowerPoint. I think it is a significant extension of the author's earlier works, "Typewriting and the death of creativity" and, "Lined paper and the ballpoint pen: the end of literacy." I certainly plan to dust off my chalkboard.

While I still admit a critical, skeptical stance toward the adoption of digital technologies in classrooms, I believe my position today is a more nuanced, measured, and practical one. I aim it to be a pedagogical stance.

To swear off PowerPoint is not an answer. Indeed, we can no longer "turn off" PowerPoint in the larger, more meaningful sense (Winner, 1989). It has long since sunk into the forgotten, taken-for-granted, well-equipped background of our everyday

experience, occasionally surfacing in unexpected places—a parent-teacher interview, a Dilbert cartoon, a church service—only to sink back once more into the silent fathoms of our digitally-textured lifeworld. Yet, as I hope I have shown through this study, it is possible, indeed necessary, for educators to awaken to the technologies that have been invited into their classrooms, and to begin to ask some hard questions of them so that we may move nearer to a pedagogy of technology.

We must of course continue to measure empirically the "effective" gains (e.g. test scores, instructor ratings) that information and communication technologies may (or may not) afford students and teachers. Too, we should then realistically weigh these gains relative to the huge fiscal commitments required to implement and sustain given technologies in schools. But more importantly, we must proceed from here with conscious regard for what *comes with* each new piece of software we introduce in the classroom. That is, technologies may no longer be viewed as neutral artifacts added without significant hermeneutical and existential consequences. In this regard, it is vital we take up our responsibility "to problematise an unquestioning allegiance to information for its own sake" (Brabazon, 2002, p. 59), and to critically evaluate each new technology in terms of its congruence with sound pedagogy as well as with democratic and ethical academic practices.

Tyack and Cuban (in Ferneding, 2003) further suggest that technology is an "ideological smokescreen" (p. 42) obscuring key social issues, like poverty, racism, violence, and the decline of partičipation in the democratic process. Or as Joseph Weizenbaum, MIT computer scientist, warned twenty years ago:

> The introduction of the computer into any problem area, be it medicine, education, or whatever, usually creates the impression that grievous deficiencies are being corrected, that something is being done. But often its principal effect is to push problems even further into obscurity—to avoid confrontation with the need for fundamentally critical thinking. (in Oppenheimer, 2003, p. 39)

It is time to review with new eyes the reality of the chronic social and ecological issues that will follow our children into the future. We may find that some uses of technology in the schools are hardly an improvement at all.

I, cyborg

It is also imperative that we attend mindfully to the material, hermeneutic, and existential shifts that are transpiring as our worlds are daily extended, intensified, and complicated by digital technologies. Our corporeal being—our lived body—is increasingly and intimately enhanced by, enmeshed with and enfolded into these new paratextual[16] machines. These new machinations mediate our lived experience with startling immediacy and complexity, lending us novel sensory worlds, and pre-scribed ways of knowing and doing that are increasingly shared globally. The moniker "digital" is signaling a radical change in our material world, but also in our human selves.

Techno-utopian thinkers like Hans Moravec and Ray Kurzweil predict human-technology fusions where the "software" of our minds, currently running on "old slow carbon-based neural-computing machinery" (Kurzweil, 1999, p. 129), will one day be uploadable to more durable, faster hardware. Our "mere jelly" bodies (Moravec, 1988, p.

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[16] The term "paratextual" is used by Gerard Genette in his book *Paratexts: Thresholds of Interpretation* (1997, original published in French as *Seuils* in 1987) to describe "accompanying productions" that bind the text and the reader together: "More than a boundary or a sealed border, the paratext is, rather, a threshold." He lists the following as examples of paratexts: title, subtitles, prefaces, postfaces, forewords, marginal notes, illustrations, book covers, dust jackets, and even the author's name. The paratext is "a fringe of the printed text which in reality controls one's whole reading of the text."

117) will be rendered obsolete, abandoned as outmoded, worn-out prosthetics. In the wake of such euphoric, science-fiction claims of material transcendence, N. Katherine Hayles (1999) reminds us that the "human mind without human body is not human mind. More to the point, it doesn't exist" (p. 246). Our human self is intimately tethered to the possibilities as well as the limitations of our human, flesh-and-blood body. Meanwhile, as the "resistant materiality" (Hayles, 1999) of our "mere jelly" body is gradually being relinquished in the wake of these technology turf wars—from pacemakers to Botox, and iPods to smart fabrics (Küchler, 2008)—a new version of human being has been conceived: the posthuman. The posthuman is a negotiated territory whose boundaries seem no longer determinable, inaugurating a new form of being "whose basic capabilities so radically exceed those of present humans as to be no longer human by our current standards" (Bostrom, 2003, p. 5).

What does this mean for teachers? Foremost, we must begin to discern and "focus on our own embodiment as the material site—the bearer—of technology's otherwise wholly inhuman impact" (Hansen, 2000, p. 263). Our grasp of the mediating influence of software is made especially difficult because its texts do not fit the usual model of representation, wherein humans and objects represent each other via words and images. Instead, software texts concern words *doing* things in particular contexts. The language of the machine has direct material effects, effects that we become complicit in as we build and engage software programs.

Thus, we might more helpfully comprehend digital technologies as locally deployed "mimetic vehicles" (Benjamin, 1978) that prereflectively shape our embodied

agency. Our interactions with these technologies, often via a screen and keyboard/mouse/controller, are direct, sensuous and mimetic. Software "affects our experience first and foremost through its infrastructural role, its import occurs prior to and independently of our production of representations" (Hansen, 2000, p. 4). In this way, our lived experience is being radically, but prereflectively re-habilitated; our intentional involvements perturbed and re-inscribed via the constraints and dispensations of pre-fabricated digital architectures. Software, says Nigel Thrift (2005), "quite literally conditions existence" (p. 241), an habituation process that occurs primarily outside of the phenomenal field of subjectivity.

We are now well into an era of technological-becoming, our sensuous bodies quietly adapting to the inhuman rhythms of an evolving, digitally inscribed and intensifying mechanosphere. Digital media technologies may no longer be perceived as simply tools that we integrate uncritically into our classrooms to serve "positive" or "constructive" instrumental ends. Rather, these paratextual machines must be recognized as effective and affective *mimetic interventions* that prereflectively re-form our being, knowing and doing in the world. Such a view necessarily burdens teachers with a renewed sense of professional responsibility, one sensitive to the fragile ecology of our classrooms in the wake of digital technology "integration," but more importantly, for the *well* being of our children living in the midst of this brave new world.

Shifting out of neutral and the road ahead

Information communication technologies (ICTs) do not *determine* our pedagogical activities. But each digital technology *does* privilege and prescribe certain

patterns of educational practice over others, subsequently enrolling us in and habituating us to particular programs of action, methods of teaching, and ways of learning. In this sense, ICTs are like non-human actors or *actants* (Latour, 2005) in the (re)assembling of our educational spaces.

Meanwhile, teacher education and professional development programs continue to treat and perpetuate the notion that ICTs are simply "tools" that, when "deployed effectively," promise to enhance teaching and learning, student ICT literacy and/or academic success. Digital technologies are viewed as powerful, yet essentially benign, means to educational ends. This common sense, "instrumental" understanding of ICTs has recommended a practical, "how-to" approach to teaching technology integration to teachers and teacher candidates. However, such an instrumental or calculative focus tends to exclude or cordon off difficult discussions regarding the complex formative influences these technologies are enacting on pedagogical practice, knowledge forms and classroom culture.

To take this one step further, contemporary technologies are the product of, as well as the increasingly complex scaffolding of a particular technological frame of mind, "a mode of revealing," which Heidegger called "enframing" (*das Gestell*). In today's intense build up and ubiquitous surround of digital technologies,

> we increasingly think and act in accordance with the world picture [modern technology] provides…The technological mode of revealing is a fixation of things by categorizing them and representing them to ourselves in thought through abstract categories, thus making manageable and capable of being efficiently manipulated—a demand to which the fluid and the ill-defined remains inconveniently resistant….We "enframe" things by turning them into instances—understanding them in terms of the objective properties attributed to members of the category to which they have been allocated. (Bonnett, 2002, p. 234).

This technological way of seeing things—wherein all things, including human beings, increasingly show up to us as resources to be enhanced and optimized for maximal efficiency—is radically restructuring our daily lives, along with contemporary learning experiences and teaching practices.

To put it another way and perhaps a little more forcefully, postmodern technology engenders a totalizing style of practices that, according to Dreyfus and Spinosa (2003) threaten to:

> restrict our openness to people and things by driving out all other styles of practice that enable us to be receptive to reality. This threat is not a problem for which we must find a solution but an *ontological condition* that requires a transformation of our understanding of being. For that, we need to understand technicity as our current mode of revealing things and people. (p. 341, [my italics])

This is not to suggest ICTs are inherently pernicious. To be sure, ICTs are "revealing" a wealth of new possibilities for communicating with others, allowing us previously unimagined access to information, and the facility to create and disseminate more information in unexpected ways. Rather, it is our technological mindedness (technicity), as materialized most articulately in digital technologies, that is serving to propel us along certain avenues of activity and habituated practices, attenuating the scope of some human experiences even as it reveals others. In short, we are living in the breathtakingly expansive yet ironically tightening instrumental grip of our postmodern, digital technologies.

I would like to propose one approach toward loosening the instrumental "how to" hold ICTs currently exercise over teacher education programs. This is part of a larger

educational project that Iain Thomson (2005) calls, after Heidegger, "an ontological education." Heidegger understood the role of the late modern teacher "as a struggle to free technologically anaesthetized enframers from their bondage to a self-reifying mode of ontological revealing" (Thomson, 2005, p. 165).

> The turn towards an ontological education involves a fundamental reattunement: The goal … is simple but literally revolutionary: to bring us full circle back to ourselves, first by turning away from the world in which we are most immediately immersed, then by turning us back to this world in a more reflexive way. (Thomson, 2005, p. 159)

To give this approach some immediate comprehensibility, let us recall as Heidegger did, Plato's famous Allegory of the Cave.

There are a group of prisoners who have been held captive in a cave since childhood. One of the prisoners escapes his chains, and turning around at last, discovers that the shadows on the wall he and the others have taken as reality, are created by puppets casting their shadows in the light of an enormous fire. The prisoner crawls from the cave into the outside world and eventually comes to understand that everything he sees there is made possible by the sun's light. Once "enlightened," the prisoner returns to the cave to free the other prisoners. But the prisoners resist their would-be liberator, believing that his outside experience has made him crazy.

On Heidegger's interpretation, the prisoner's four dwelling places—living chained in the cave, freeing himself and turning toward the fire, ascending into the sunlight, and returning to the cave—represent "four successive stages whereby ontological education breaks students' bondage to the technological mode of revealing, freeing them to understand the being of *what-is* differently" (Thomson, 2005, p. 162).

At the first dwelling place—the place where we find ourselves today—the students' are thoroughly "'engrossed in what they immediately encounter' taking the shadows cast as the ultimate reality of things"…but the shadows on the wall "represent enframing's ontologically reductive mode of revealing." That is, all things (including the students themselves) show up as resources to be optimized. Here education can easily appear as a means to optimize instrumental ends, for example, to make more money, or, as one Harvard graduate puts it: "the classroom [is] just another résumé-padding opportunity" (Douthat, 2005, p. 96). Like the prisoners subjected to the primitive shadows on the cave wall, we may recognize today's students as prisoners to the uninterrogated, highly articulated images projected upon the lecture room screen, the world enframed as slides and bulleted knowledge.

Liberation from the chains can only occur when the student's "gaze is freed from its captivity to shadows," that is, when a student recognizes the fire itself—"the enframing"—as the source of the shadows wherein all things appear as mere resources. However this new metaphysical gaze will still fail, because, entities do not reveal themselves *as they are* by the hermeneutic distortions of the enframing, a man-made fire. "When forced into the metaphysical mold of enframing, [entities do not show themselves] because its underlying ontotheology reduces them to mere resources to be optimized" (Thomson, 2005, p. 163). By the light of this same fire, how can the world show up to the student otherwise? While the task here is one of awakening students to their own enframing, only a negative ontological freedom is possible. It is a freedom from the enframing, but without another light to see by. Within the context of a class on

the use of digital media technologies in education, one might awaken students to the enframing "fire" by drawing attention to the technologies themselves. For example, the PowerPoint slide below (Figure 3.) shows how it may be used to illustrate the conditioning influence this software exerts on its users and audience.

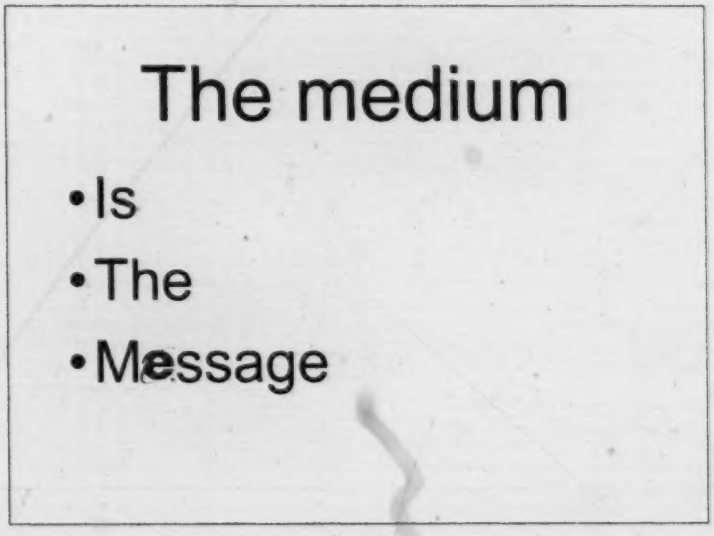

Figure 3: "The medium is the massage" slide

Here the enframing becomes momentarily apparent, shifting from the invisible background into the foreground, and yet there is nothing yet to be done about it. It is *the* ontotheological frame of our time, the current way of making things intelligible in our cave.

Real or "effective" freedom is attained only when the released prisoner finds his way outside of the cave and "into the open." Here, entities—persons and things—can appear as more than resources and so become *free for* understanding in their essential being. Heidegger describes this positive ontological freedom as a comportmental

attunement to "what things are…no longer appearing merely in the man-made and confusing glow of the fire within the cave. The *things themselves* stand there in the binding force and validity of their own visible form" (Heidegger, 1998, p. 169).

Or as Thomson puts it: "Ontological freedom is achieved when entities show themselves in their full phenomenological richness and complexity, overflowing and so exceeding the conceptual boundaries our normal unnoticed ontotheological enframing places on them" (2005, p. 164). The task here is to help students learn how to "dwell," that is to attune themselves to the being of entities. In this phenomenological "presencing," entities show themselves "as being richer in meaning than we are capable of doing justice conceptually, rather than taking them as intrinsically meaningless resources awaiting optimization, and so learn to approach them with care, humility, patience, and even awe" (p. 164). Here a wholly different tack is called for in teacher education, one conditioned not by technology, but through a decided turn to pedagogy, that is, the normative project conditioned most thoroughly by "love and care, hope and trust, and responsibility" (van Manen, 1991, p. 65) for the child.

Finally, the return to the cave is reserved for the teacher who would undertake the journey back, to be the "ontological educator." Perhaps we may recognize the would-be liberator-teacher standing to the side of the projected PowerPoint slides, the returned prisoner wishing to free his fellows by the light of the fire. But

> Someone who has "escaped the cave" by learning to develop a comportment receptive to modes of phenomenological revealing other than enframing "no longer knows his or her way around the cave and risks the danger of succumbing to the overwhelming power of the kind of truth that is normative there, the danger of being overcome by the claim of the common reality to be the only reality" (Thomson, 2005, p. 165 n. 25).

Whether the teacher we find pointing at the wall in the cave is simply another prisoner still in the dark, or the one newly returned but overwhelmed, or more hopefully, the enlightened one speaking the language of the prisoners in an effort to free them from it, is uncertain.

The word "teach" derives from the German verb *zeigen* that means, "to show or point to." But what does the one who teaches, point to or show? The Oxford English Dictionary (1989) reminds us that "to teach" once meant, "to show (a person) the way." *Way* ambiguously but also fortuitously signifies both "path" and "manner." Thus a teacher is the one who shows or points a person along a particular path *and* in a particular manner. Both curriculum and method, representative and presentative, the *what* and the *how* are implicated in teaching or in showing someone the way. So, as teachers teaching with PowerPoint, we must concern ourselves with these questions: What path are we indicating to our students when we teach with PowerPoint? And what manner or style are we teaching them? What way do we *show* with PowerPoint?

A central purpose of education, according to Heidegger, is transformation of the self. He is critical of education that is concerned with "merely pouring knowledge into the unprepared soul as if it were some container held out empty and waiting. On the contrary real education lays hold of the soul itself and transforms it in its entirety" (Heidegger, 1998, p. 167). This transformation of the self can only be achieved by calling into question what we take for granted about our world and ourselves; by challenging assumptions we make about them. In other words, it involves "turning around the whole human being. It means removing human beings from the region where they first

encounter things and transferring and accustoming them to another realm where beings appear" (1998, p. 167). When the familiar or everyday appears in a new light, the way is open for other possibilities, other ways of being. Becoming a teacher involves "turning around" or transforming the self. Through interrogating and re-shaping assumptions about what it is to teach, new ways of being are opened and can begin to take shape. It is not only a question of epistemology but, more particularly, of ontology.

The continued promotion of digital technologies as neutral agents—a foundational belief or "posit" of our current ontological epoch—imperils the normative project of pedagogy by concealing the instrumental constructs they materialize. Alerting student teachers to the invisible but formative inscriptions of digital technologies can develop a deeper appreciation for the complexities of today's classroom environment, as well as for the challenges their own students will face in tomorrow's ubiquitous computing culture. Such knowledge encourages teachers to favor pedagogically-sensitive practices over technologically-driven activities. Here ICTs are neither embraced nor eschewed, but are thoughtfully employed, provoked, subverted, reworked or simply laid aside as deemed pedagogically apt in the lived context of the classroom.

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APPENDIX:

RESEARCH ETHICS

Overview of Research Project

Background

Over the last few decades, university teachers across faculties have tried an astonishing variety of prepackaged software tools to assist them in their teaching practices, most particularly in communicating knowledge to students. I aim to investigate how software technologies may be constituting, shaping, and influencing the structures of educational experiences at the undergraduate level. Specifically, this research project explores students' and teachers' experiences of software presentation tools (e.g. PowerPoint, Keynote) in the classroom. The research asks: What are the tacit and pedagogical dimensions of PowerPoint presentations for students? How is this medium reshaping how knowledge is represented, presented and subsequently held by students and teachers alike?

Method

The method of inquiry is qualitative, informed by a philosophically grounded methodology (hermeneutic phenomenology) and by the heuristic notions of pedagogical tact and thoughtfulness (van Manen, 1997).

The study addresses three distinct questions that investigate communicative modes of PowerPoint engagement:

1. How are PowerPoint presentations experienced by the student?
2. How does the teacher experience constructing a presentation with PowerPoint?
3. How does the teacher experience teaching through PowerPoint presentation?

Formal participant research activities will include conversational interview and/or requests for written lived experience descriptions from faculty, and post-

secondary students. Other data collection activities include retrospective and introspective investigations of my own lived experiences with PowerPoint.

Such a qualitative approach intends to capture comprehensively, recognizably and powerfully each of the above dimensions of the PowerPoint teaching and learning experience. The final document will organize the phenomenological data thematically, and explore in light of each theme the overriding research questions regarding the pedagogical, epistemological, and value implications of this software presentation tool as a way of teaching.

Participants

Undergraduate students - Students registered at MacEwan College in a variety of classes will be informed of the project in class through a visit from the researcher briefly describing the project. Participation will be explained to involve a one hour, confidential interview regarding their experiences of PowerPoint as an undergraduate student, and to be arranged at their convenience. A "Request for Volunteers" letter will be distributed (or an email afterwards depending on instructor preference) outlining the scope and voluntary nature of participation in the study. Students will be asked to indicate their interest in participating *after class* through a response email sent directly to the researcher (the associated teaching faculty will not be informed of who is participating and who is not).

University and College Faculty – Faculty will be asked to describe their experience of using PowerPoint as a tool to compose class presentations, as well as their experiences of using PowerPoint directly in classes. Participation is voluntary. A "Request for Volunteers" letter (see attached) will be distributed to faculty mailboxes.

Education Graduate Students – Graduate students will also be asked to describe their experience of using PowerPoint as a tool to compose class presentation, as well as their experiences using PowerPoint in classes, both as learner and teacher.

Participation is voluntary. A "Request for Volunteers" letter (see attached) will be distributed to education graduate student mailboxes.

In lieu of an interview or in addition to the interview, faculty and student participants may also be invited to provide written lived experience descriptions (LEDs) of some particular memorable experience or experiences of PowerPoint. Any such written material provided by a participant will be treated in the same confidential, secure manner as transcribed interview texts. When interview material and/or provided LEDS are to be included in a manuscript for publication, participants will be given opportunity to see how the material they have supplied may be integrated, and will be given sufficient opportunity to request revisions, deletions and other changes. Participants will have opportunity to opt out up to and including this juncture.

Data Collection

Data will be collected primarily through interview of participants (data to include researcher notes, and transcribed interview text) and/or requests for written lived experience descriptions. Participants in this research will be faculty members and students at the University of Alberta and MacEwan College (as described above). All participants involved in this research project are volunteers and will be interviewed on their own time.

Conversational interview: Approximately ten (10) faculty participants and twenty (20) students will be sought to participate in this type of interview. Interviews will be approximately one hour, and, with the consent of the participant, will be audio recorded. In any event, written notes will be taken by the researcher during the interview. In interviews intended to gather phenomenological (anecdotal) data, it is important for the discussion to be free-flowing and relatively unstructured for the participants. Throughout the interview, participants will be asked to engage in dialogue and conversation pertinent to the topic of the study, and to share experiences of creating, using and/or viewing

PowerPoint presentations. Whenever possible, interviews will be conducted in settings where a computer is available to display PowerPoint presentations. This will assist in making discussions concrete, and allow participants to demonstrate or to be reminded of aspects of their experiences with PowerPoint.

Participants will also be explicitly encouraged to reflect on the pedagogical and existential significance of their relevant experiences. Dimensions of experience (e.g. time, body, space, action, relation) may sometimes be referred to in order to provide focus. For example, a faculty-participant may be prompted to reflect on how time is experienced in giving a PowerPoint lecture; or a student-participant may be asked to describe their experience of pedagogic relationship with the instructor using PowerPoint compared to during another presentation modality (e.g. class discussion or whiteboard).

Written accounts: In some instances, the researcher may ask the participant for a written account of a certain recollection (LED) of an experience with PowerPoint in addition to or instead of an interview.

Dissemination of results

One or more scholarly monographs based on this research will be prepared for publication in an educational research journal, and the body of the results will form the basis of my dissertation. Results will likewise be reported at selected educational and/or qualitative research conference. Due to the ubiquity of presentation software use in schools as well as businesses, it is expected this research will be of broad public interest.

Benefits to participants

I expect that the opportunity to reflect on the pedagogical significance of PowerPoint use in the classroom will be of particular benefit to participating teaching faculty. Too, students will have the opportunity reflect similarly, as well as experience firsthand how a qualitative research interview is conducted.

Procedures for Compliance with the U of A Standards

Human research conducted under the auspices of the University of Alberta must follow the Standards reflected in the GFC Policy Manual Section 66 entitled "Human Research - University of Alberta Standards for the Protection of Human Research Participants." This document is available on the University web site at http://www.ualberta.ca/~unisecr/policy/sec66.html

Please attach the following:

- Information letter(s) to participant(s) (e.g. teachers, students, parents/guardians) (see suggested template)
- Consent form(s) for participant(s) (e.g. teachers, students, parent/guardians) (see suggested template)
- In the case of solicitation of participants through advertisement, a copy of the advertisement(s)
- A copy of any data gathering instruments. In the case of published instruments, only the name need be given. In the case of interviews, sample interview questions must be included.
- A copy of the *Confidentiality Agreement* (if required)
- Any additional documentation

Letters of consent, information letters, confidentiality agreements and other documentation follow. Some details of the project need to be established before letters of consent and confidentiality agreements are written and these details cannot be worked through until initial ethics clearance is obtained.

Please describe clearly and concisely how you intend to comply with the Standards by answering each of the following questions.

1. *How will you explain the purpose and nature of your research to prospective participants?*

   Participants will be approached in a number of ways. MacEwan faculty, University of Alberta Education faculty, and Education graduate students will be approached personally, the project explained, and be asked if they wish to participate in the study. Following agreement to participate, a formal letter and consent form will be provided to the faculty or graduate student. These documents explain the project, the scope of participation expected, and rights as a volunteer participant.

   Undergraduate student participation will be solicited through individual faculty at MacEwan College. Permission will be sought for the researcher to attend a class briefly to explain the project, or if preferred, the instructor will explain the project. A "request for participation" letter will then be distributed to the class requesting volunteers and reiterating the scope and voluntary nature of participation. Students expressing interest in participating via an email or by phone directly to the researcher will receive a formal letter and consent form. No inducements or promises (academic, monetary or otherwise) will be offered as incentive to participate.

2. *(a) What steps will you take to obtain the free and informed consent of the participants? e.g. How will you provide opportunities for potential participants to exercise their right to not participate?*

   Participants will be given a verbal and written explanation of the project and the various levels of involvement. They will be able to contact the researcher, via email or by phone, at any stage should they have questions. When interview material and/or provided LEDS are to be included in a manuscript for publication and/or my dissertation, participants will be given opportunity to see how the material they have supplied may be integrated, and will be given sufficient opportunity to request revisions, deletions and other changes. Participants will be informed they may also

opt out of the research project up to and including this juncture, that is, until the completion of data analysis.

(b) Are there limited and/or temporary exceptions to the general requirements for full disclosure of information? If yes, (i) please describe the exception(s) (ii) justify the need for the exception(s), and (iii) explain the provisions for debriefing participants.

There are no limited or temporary exceptions to the general requirements for full disclosure.

(c) Are there any circumstances which could compromise the voluntary consent of participants (e.g., incentives, captive populations, second relationship)? If yes, how will these circumstances be dealt with?

The researcher will not recruit her own current students. Student participation is entirely voluntary, and is explicitly unrelated to any particular class. Faculty participation is also entirely voluntary.

3. *How will you provide opportunities for your participants to exercise the right to opt out without penalty, harm or loss of promised benefit?*

   Participants are free to opt out by contacting the researcher; Participants are free to withdraw from the study, to refuse to answer specific questions, and/or to withdraw participation at any time, provided this withdrawal takes place prior to the completion of data analysis. No benefit or penalties apply.

4. *(a) How will you address privacy, anonymity and confidentiality issues?*

   The identity of all participants will remain confidential and will only be known by the researcher and her supervisor. Actual names will be removed from transcripts and replaced with pseudonyms. If direct reference is required, these pseudonyms will be used in any resulting documentation or publication.

(b) If you plan to record sounds or images in your project, how will you address anonymity and confidentiality of participants and non-participants?

Interviews of participants will be audio recorded with their consent. These recordings will only be heard by the researcher during the transcribing process, then erased. The researcher is professionally obligated to maintain the anonymity and confidentiality of participants.

5. *Will there be any risk, threat or harm to the participants or to others? If yes, (a) please elaborate and (b) how will you minimize the risk, threat or harm?*

   There will be no risk, threat or foreseeable harm to participants or others.

6. *How will you provide for security of the data during the study and for a minimum of 5 years thereafter?*

   Recordings will be transcribed as soon as possible after the interview, and original recordings promptly erased. Maintained transcriptions will use pseudonyms for any named individuals including the participant. Between interviews and transcribing periods, the digital recorder will be held by the researcher, in a locked filing cabinet in the researcher's office at MacEwan College, or at the researchers home (10504-125 Street, Edmonton, AB T5N 1T5). Data—including transcribed interviews, consent forms, and interview notes—from this study will be maintained in a locked filing cabinet in my home at 10504-125 Street. Data will be kept there for the duration of the project, as well as 5 years thereafter, after which time it will be destroyed.

7. *If you involve research assistants, transcribers, interpreters and/or other personnel to carry out specific research tasks in your research, how will you ensure that they comply with the Standards?*

   The researcher will be carrying out all these activities herself.

8. *Please describe any other procedures relevant to complying with the Standards.*

There are no other relevant procedures

Request for Volunteers to participate in a Research Project

Date

Dear student/faculty/fellow graduate student,

[As mentioned in your _____ class today,] I am seeking volunteers to participate in the research project: "Phenomenology of PowerPoint: the lived experience of software presentation tools in the classroom." The purpose of this research is to explore the pedagogical dimensions of PowerPoint presentation in the classroom. Your participation in providing ordinary and familiar experiences is an integral part of the qualitative inquiry employed in this study. Without your involvement such experiential material would be difficult, if not impossible, to obtain.

As a volunteer in this study you will be asked to participate in a personal interview of about one hour, at a time convenient to you. The interview will be conversational in nature and will be relatively unstructured for you as a participant. A sample interview question is: "Thinking back over the last few weeks, recall a particular class [that/in which you] used PowerPoint. What do you remember about it?" During the interview, I will ask you to share your personal accounts and stories of your experiences of PowerPoint in the classroom. You may also be asked to write a short description of a particular incident you have recalled. Any information you share about your current or past instructors or any other individuals will be held in strict confidence. However, I would request that you refrain from explicitly identifying instructors or other individuals whenever possible.

The content of our discussion will be used only for research purposes, and for research presentation and writing based on this study. If you are referenced in dialogue, discussion or story, this reference will be attributed anonymously in the written text of the study and any resulting publications. If requested, you will also be given the opportunity to see how any material from the interview may be integrated into a scholarly manuscript (e.g. a journal article and/or dissertation), and you will have the chance to request revisions, deletions and other changes in this context. After you have agreed to participate, you have the option to withdraw from the study, to refuse to answer specific questions, and/or to otherwise withdraw your participation at any time, provided this withdrawal takes place prior to the completion of data analysis.

If you are interested in participating or have further questions, please reply to my email address (adamsc@macewan.ca) or phone 966-1646 and I will contact you with a more detailed information letter and consent form. Thank you in advance for your valuable contribution to this project.

Sincerely,

Cathy Adams
Provisional PhD candidate (Secondary Education, University of Alberta)
Instructor (Computing Science & Educational Technology, MacEwan College)

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEA REB at (780) 492-3751

This study has also been reviewed and approved by the Research Ethics Review Committee at MacEwan College.

Information Letter to Participants

Date

Dear Participant,

I invite you to participate in the research project "Phenomenology of PowerPoint: the lived experience of software presentation tools in the classroom." The purpose of this research is to explore the pedagogical dimensions of PowerPoint presentations in the classroom. Your participation in providing memories or accounts of your experiences is an integral part of the qualitative inquiry employed in this study. Without your involvement such experiential material would be difficult, if not impossible, to obtain.

As a volunteer in this study you will be asked to participate in a personal interview of approximately one hour. The interview will be conversational in nature and will be relatively unstructured for you as a participant. Throughout the interview, I will ask you to engage in conversation that relates to the topic of this research study, to share your personal accounts and anecdotes related to your classroom experiences of PowerPoint. If you are willing, you may also be asked to write a short description of a particular incident involving PowerPoint you have recalled.

With your permission, I will audio record the interview. However, if you prefer, I will only take notes. If recorded, a typed transcript will be created, and saved under a pseudonym. Any other identifying names or places will be similarly altered. Notes will also be typed, as well as any written materials you may provide, and retained electronically. Once transcribed, the voice recording will be destroyed.

You have my assurance that the content of our discussions will be held in confidence and will only be used for research purposes, and for presentation and writing based on the study. If you are referenced in dialogue, discussion or story this reference will remain anonymous. Your anonymity as a participant in this study is assured through the use of a pseudonym in all written records. If requested, you will also be given the opportunity to see how any material from the interview may be integrated into a scholarly manuscript (e.g. a journal article and/or dissertation), and you will have the chance to request revisions, deletions and other changes in this context. After the research project and its attendant writing are complete, remaining records will retained in a secure place for a minimum of five (5) years, at which point they will be destroyed. If you have any questions, please contact me by phone at 780-447-1646 or by e-mail at adamsc@macewan.ca or my supervisor Dr. George Buck at 492 9275 or at george.buck@ualberta.ca.

Once again, thank you for your valuable participation in this research project. I trust that its findings will be of interest to educators at all levels.

Sincerely,

Cathy Adams
Provisional PhD candidate (Secondary Education, University of Alberta)
Instructor (Computing Science & Educational Technology, MacEwan College)

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEA REB at (780) 492-3751

This study has also been reviewed and approved by the Research Ethics Review Committee at MacEwan College.

CONSENT FORM for PARTICIPANTS

Research project: Phenomenology of PowerPoint: The lived experience of software presentation tools in the classroom
Principal Investigator: Cathy Adams adamsc@macewan.ca, caadams@ualberta.ca

I, _____, consent to participate in the research project "Phenomenology of PowerPoint: The lived experience of software presentation tools in the classroom." The purpose of this research project is to explore the pedagogical dimensions of PowerPoint presentations in the classroom.

I give my consent to be interviewed and/or to write of my experiences regarding this topic. I understand that the interview may be recorded on audio tape and/or on a note pad. I understand that only the principal investigator, Cathy Adams, will have access to the content of the audio-tape, transcripts, notes, or written material shared by me. I understand that the information I provide will be kept anonymous by not referring to me by my name or location, but by using a pseudonym. I understand that the information I provide may be used in research presentations, reports or other scholarly manuscripts for publication.

I understand that I am free to withdraw from the study, to refuse to answer specific questions, and/or to withdraw my participation at any time, provided this withdrawal takes place prior to the completion of data analysis. I understand that participation in any aspects of the study is voluntary. I understand that there will be no risks involved in this study.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEA REB at (780) 492-3751

This study has also been reviewed and approved by the Research Ethics Review Committee at MacEwan College.

Participant:	Researcher: Cathy Adams
Signed:	Signed:
Date:	Date:

Sample Interview Questions

Students:

Thinking back over the last few weeks, recall a particular class that used PowerPoint. What do you remember about it?

Do you a recall a PowerPoint presentation that you feel worked very well? Can you tell me about it?

Can you recall a PowerPoint presentation that you felt did not work very well at all? Do recall the details of it?

Thinking back over the last few weeks, recall a particular class that did NOT use PowerPoint. What do you remember about it?

Have you been asked to create a PowerPoint presentation in any of your classes? Can you tell me about it?

Faculty:

Thinking back over the last week or so, recall a particular class in which you used PowerPoint. What do you remember about it?

Thinking back over the last week or so, recall a particular class in which you did not use PowerPoint. What do you remember about it?

Tell me about your most memorable PowerPoint presentation, or remembered incident concerning a PowerPoint presentation.

Tell me about your process of preparing a teaching presentation using PowerPoint. For example, the last presentation you prepared…

Graduate students: – use both depending on if they have teaching experience using PowerPoint.